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ATARI USER

Vol. 3 No. 7 November 1987 £1.25



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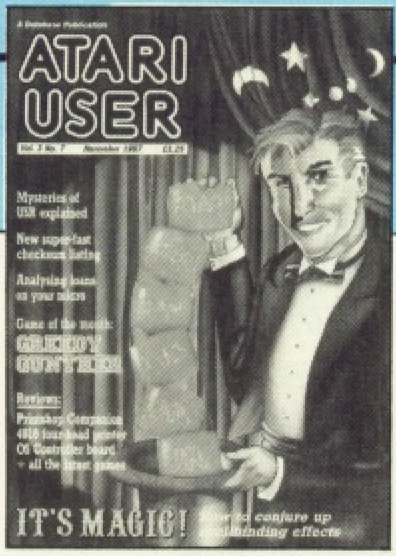
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Contents

Get it right! II

All major listings in this issue are accompanied by checksums to help overcome typing mistakes. For full details of how they work, see the article on page 23 of this issue of *Atari User*.

Games console 'stars' on TV

A HARD-HITTING pre-Christmas television advertising campaign has been launched featuring the new Atari games console.

It is part of Atari's commitment to its 8 bit range and backs up the company's prediction of massive sales of video consoles and games before the end of the year.

As an Atari spokesman put it: "With the video games system starting from as little as £49.95, good software backup and outlets in a number of leading High Street stores, we can't see how it can fail".

The brash, colourful and exciting advert with its highly developed video graphics and stirring music is designed to stand out among the mass of pre-Christmas product promotions on the small screen.

Atari launched the campaign at the PCW Show, where it took the largest exhibiting area, occupying more than 1,000 square metres.

Another 43 companies took stands in specially-designated "pavilions" within the Atari area with a range of hardware, software and peripherals which showed the wealth of products now available for Atari computers.

Bargains in store at show

EXHIBITORS at this year's Atari Christmas Show have begun to reveal the new products and bargain offers they have in store for 8 bit users.

Last year the first Atari Christmas Show was a resounding success, with nearly 10,000 people packing the Royal Horticultural Hall in London.

This year's show will be held in the plush setting of the Champagne Suite at the Novotel, Hammersmith, scene of so many great computer events staged by Database Exhibitions.

From November 20 to 22, the Atari Christmas Show will mirror all the year's past developments – with emphasis on the entirely new approach to the games market.

All the leading suppliers of Atari add-ons and software will be at the Novotel, their stands piled high with their latest products and cut-price offers.

Software Store has imported a large range of new cartridge games from America for the 8 bit machines, and will have an increased supply of bargain software on disc and cassette.

A revolutionary multi-function joystick will be launched at the show by RH Design. The company claims that its new joystick is completely different from all others on the market. Priced at under £19, the joystick includes a free two metre extension lead.

In addition to supplying cut price discs, Zonefour will be catering for the games player with more than 30 disc based titles to choose from at the bargain price of £1.99 each.

A full range of bargain cartridge, cassette and disc based games are on offer from MCD. About 40 cut-price titles will be available as well as massive savings on Atari 400 and 800 computers, cassette recorders, joysticks and paddles.

A money saving advance ticket order form is on Page 17.

COMIC CAPERS

ONE of the most famous Marvel Comic heroes has been transported to the Atari 8 bit. Captain America from US Gold (021-356 3388) has the superhero set against Dr Meglomann and his Doom Tube.

It is the fourth of-July and the whole of America is geared for the biggest celebration since the Bicentennial.

At dawn, however, the President has an uninvited visitor – Dr Meglomann. The baddy demands the President abdicate in favour of him or he will unleash a deadly virus, transported to Central America on a rocket.

Object of the game is to navigate the revolving Doom Tube which is housed within six underground decks, find the missile and destroy it.



A whirl on the wheel

A FORTUNE can be won or lost at the roulette wheel – without endangering the family savings – on a new gambling game for the Atari 8 bit.

Casino Roulette is from CDS (0302 21134), the software house which has specialised in bringing traditional games to the home computer.

Using the International or French style table, the game allows up to eight players to gamble at once.

Players place their bets in any combination of 15 wagers allowed. The wheel spins, the number is selected and the program works out the winnings, adds chips to players' stacks and rakes the table.

Features include standard odds, play analysis which keeps track of individual performances, statistical analysis of the fall of the ball over the previous 370 spins and instructions including a dozen established betting systems.

Price £9.99 on cassette and £14.99 on disc.

Atari sales are soaring

Sharply improved results for the first half of 1987 have been revealed by the Atari Corporation. Compared with the same period last year income is up more than a massive 132 per cent, with sales showing an improvement of nearly a third at around $136 million.

"Atari continues to enjoy a favoured market position throughout the world", said a spokesman. "Record sales were again achieved in both the video game and computer product lines".

"Pursuing a vertical integration, the company intends to make acquistions in computer or related fields. An active search is underway to identify appropriate businesses whose activities will complement Atari's operations".

The figures show that at the end of the period under review, Atari had $198 million in capital, as compared with $40 last year.

XL answer to the dole queue

ENGINEER Philip Gibbs has emerged from the dole queue to the brink of self-employed success with the aid of his Atari 800XL.

He bought the machine three years ago – adding a Touch Tablet, Atari Artist, 1027 printer and 1050 disc drive – but 12 months later found himself unemployed at the age of 56.

After reading a review in *Atari User* he bought Superscript and used it to write more than 200 job applications, but without success.

"When, after all this effort, I still couldn't get a job my thoughts turned to self-employment", Philip told *Atari User*.

He decided to solicit support to help him develop a new engineering product and was successful in obtaining grants from business development agencies in his home town of Sheffield.

"I added Super 3D Plotter II and a 1029 printer which enabled me to produce convincing 3D drawings. The suppliers, Demon Software, gave me lots of help to modify the program".

Philip's prototype of a self-erecting steel tower for communications and security systems is already nearing completion.

"I'm now receiving financial support from British Steel Enterprise, British Coal and the Government to go into production", he said.

"I'm grateful to both my Atari 800XL and *Atari User* – they have not only helped me to survive a very difficult time, but have also helped to create jobs for five people at my new Sheffield Skyhook company".

More games on way

A SERIES of games old and new are about to be released on the Atari 8 bit by Tynesoft.

Due out soon is Winter Olympics '88, timed to coincide with the opening of the real thing which is taking place at Calgary in Canada.

Tynesoft (091-414 4611) says six of the most challenging Olympic events have been selected to test the player's abilities to the full.

Ski jumping, slalom, downhill racing, tobogganing, the gruelling biathlon and speed skating are all on the £9.95 cassette.

Mirax Force, the space war game which sets a lone fighter against the guardians of a fleet of heavily protected motherships, has been rewritten for the 8 bit, price £7.95 on cassette and £9.95 on disc.

Tynesoft's first Four Great Games compilation proved so popular that the company plans to release another.

The Atari 8 bit version will have Who Dares Wins II, Space Hawk, Mousetrap and Killer Cycle, at £3.99 for a twin cassette pack or £5.99 on disc.

SILENCE IS GOLDEN

A CLEVER new device which allows computer game players to run their favourite programs without disturbing the rest of the household has just been released.

Chasing those high scores without fear of complaint has been made possible through Sound Master, which costs just £14.99 from Database Electronics (061-480 0171).

The package which can be used with all Atari 8 bit machines except the 400 includes a special interface encased in tough plastic with a graded volume control.

The beautifully constructed Ross stereo headphones are fully guaranteed. They come with a special adapter which allows them to deliver crystal clear reproduction with personal stereo or hi-fi systems too.

Every Sound Master is supplied in a colourful presentation pack with detailed instructions.

The Gallup Chart Top 20 Atari Software

This Month	Last Month	Title (Software House)	Price
1	1	DECATHLON *Firebird*	1.99
2	●	180 *Mastertronic*	2.99
3	2	MILK RACE *Mastertronic*	2.99
4	●	STORM *Bulldog*	1.99
5	●	ON CUE *Mastertronic*	2.99
6	●	FEUD *Bulldog*	1.99
7	4	LIVING DAYLIGHTS *Domark*	9.95
8	3	GAUNTLET *US Gold*	9.95
9	12	SILENT SERVICE *Microprose/US Gold*	9.95
10	●	SUPERMAN *First Star/Prism*	2.99
11	10	FRENESIS *Mastertronic*	1.99
12	17	TABLE FOOTBALL *Rhino*	1.99
13	13	BOULDERDASH *First Star/Prism*	2.99
14	●	BOULDER DASH II *First Star/Prism*	2.99
15	14	LEADERBOARD *Access/US Gold*	9.95
16	●	DIZZY DICE *Players*	1.99
17	●	BMX SIMULATOR *Codemasters*	1.99
18	●	MOLECULE MAN *Mastertronic*	1.99
19	6	GUN LAW *Mastertronic*	1.99
20	8	MICRO RHYTHM *Firebird*	1.99

Compiled by Gallup/Microscope

Nine games enter the chart this month – you can find reviews of 180, Storm, On Cue, Feud and Boulder Dash II in this issue of *Atari User*. The Top 10 is dominated by budget software with the £1.99 Decathlon holding the number one position.

MicroLink in association with TELECOM GOLD

NEWSLETTER

USA link back in action

THE giant American database Mnematics is once again available to MicroLink subscribers after a complete reorganisation.

Mnematics' switch to a more efficient system carrier caused the temporary severance of UK links with the dynamic electronic information source.

But now MicroLink subscribers can again chat to enthusiasts in the USA and tap the vast array of computer-related and special interest group sections.

All the old Mnematics features are back – plus some new departments – and there are plans for even closer ties with MicroLink.

These include a reverse gateway to allow the Americans to make direct calls to MicroLink and see what's on offer over here.

A new line for the Church

COMPUTER communications systems like MicroLink have become a major focus of interest for Britain's churches.

A joint study of information technology is currently being undertaken by Church House, the Anglican Consultative Council and the British Council of Churches. It will eventually lead to more efficient electronic communication between churches all over the world.

Meanwhile similar assessments on a smaller scale are being conducted in just about every diocese in the UK. Typical of these is the one being done by the Rev Richard Thomas, communications officer for the Diocese of Winchester.

"I'm using MicroLink as part of my brief to explore the whole area of communications", he said.

"I believe electronic mail is going to become very important and I'm sure it has a lot to offer the Church – both nationally and internationally – as a communications medium".

Farming baronet on line

DOWN on the farm or in the factory, baronet and MicroLink subscriber Sir Charles Legard is equally at home thanks to computer communications.

Information technology makes sure he's always up to date with what's happening on his North Yorkshire estates in the Vale of Pickering as well as the family businesses in Leeds and Bradford.

Sir Charles farms 1,700 acres of arable land around Scampston Hall, Malton, in addition to running companies involved in engineering and wholesaling electrical components.

Legards have owned land in Yorkshire since the 12th Century, but the micro and modem are now as much a part of the scene at Scampston Hall as the family portraits.

"Whether I'm at home or in one of my offices, computer communications keep me constantly in touch with what's going on elsewhere", said Sir Charles.

Communicating to cut unemployment

TWO organisations at opposite ends of the spectrum are using MicroLink communications as they attempt to reduce unemployment.

Camden Jobtrain in North London provides local youngsters with opportunities to learn the specific skills which surveys have revealed are most wanted by employers in the area.

There are 120 places on courses in motor mechanics, carpentry and joinery, office skills, catering, and care for the elderly and young children – all leading to City and Guilds or other qualifications.

At the other end of the scale, the Mid-Career Development Centre in Croydon helps business and professional people who have been made redundant or want a more fulfilling job.

The Centre's experienced career counsellors provide individual help to restore confidence and practical assistance in getting a new job.

"Many people find that being made redundant turned out to be a lucky break because it galvanised them into action they might otherwise never have taken", says principal Kieran Duignan.

Your chance to join MicroLink – turn to Page 4

BR BOOKING EASIER

MICROLINK's convenient British Rail telebooking service has been given a complete update.

It allows subscribers at any hour of the day or night to order train tickets for journeys between London and more than 20 major UK centres from Aberdeen to York.

Subscribers can book their journeys via MicroLink after studying the electronic timetables in the comfort of their own home or office, and charge them to their Access, Barclaycard, American Express or Travel Key account. Tickets are sent by return post.

The USR function

One of the most powerful Atari commands explained in detail by LEN GOLDING

USR is the most powerful and versatile function in Atari Basic – but it's also the most poorly documented. You'll come across it frequently in magazine listings, but very few Basic text books give it more than a passing mention. In this two-part series we'll examine the rules for using USR and present a few programs to show how you can make it work for you.

First of all, let's define it. USR is a function (like PEEK, LOG or STRIG) and it allows you to run a machine code subroutine from inside a Basic program. That may not sound too earth shattering, but in fact it adds enormously to the range of things your computer can do.

There are many tasks which Basic can't handle, either because it's too slow or because it doesn't contain the relevant commands. Vertical movement of player-missile graphics, fine horizontal and vertical scrolling, display list interrupts and direct CIO calls are among these.

Machine code, on the other hand, can do almost anything and executes at lightning speed, but it makes heavy weather of some tasks which Basic can handle easily, like complex arithmetic, string manipulation and drawing things on screen.

USR gives you the best of both worlds. You can write most of your program in Basic, and use machine code for only those bits that need it. But USR is rather finicky, and you have to be very careful to observe all its rules, otherwise your program will probably crash. So here's how to use it, step-by-step.

First of all you need a machine code routine for USR to execute; if you can't write machine code, you can't use USR. But you don't need to be an expert machine code programmer – even very short and simple routines can be extremely interesting and worthwhile. Here's the simplest we can think of:

```
LDA #0
STA 710
```

This is the equivalent of POKE 710,0, so it's not particularly exciting, but it will serve to demonstrate how USR works. If you were programming entirely in machine code, the routine would be fine in this form, but if it has to be called by Basic and hand control back to Basic afterwards, you need to add two linking instructions.

The routine should start with a PLA (for reasons which will become clear next month), and the very last command must be RTS. The full working machine code routine is shown in Program I.

You can't type these instructions in Basic, of course. Some form of assembler is needed, such as Atari's Assembler Editor cartridge. This can accept Program I in its listed form (which is known as source code) and will convert it into object code – a string of numbers which the 6502 processor can understand.

Since we're planning to run this routine from inside Basic, it has to be stored in memory along with the Basic program. The easiest way of doing this is to write the numbers into your Basic program in the form of DATA statements and get Basic to put them into an appropriate memory location – Program II shows one way of doing it. But first you need to convert your source code into decimal numbers.

Any Assembler will work out the numbers for you, but it will usually display them in hexadecimal form. Converting them into their decimal equivalents is easy enough for small routines – just look up the corresponding numbers in tables, or use a hex-to-decimal converter program such as Program III.

But for longer routines it's worth using a more sophisticated program which will do all the conversion and also write the DATA statements for you – we'll give you one next month. The four-line routine at Program I translates like this:

Source code	Hexadecimal	Decimal
PLA	68	104
LDA #0	A9 00	169 0
STA 710	8D C6 02	141 198 2
RTS	60	96

These decimal numbers have to be stored somewhere safe in memory, and Page 6 (addresses 1536 to 1791) is a good place to use while you're learning.

Try running Program II: If all is well the screen will turn black. No big deal so far, but here's something interesting to try – press Reset to restore the blue screen colour and type NEW to get rid of the Basic program.

Now type X=USR(1536) and hit Return – the screen goes black again – even though there's no visible program in memory. The reason is, of

Turn to Page 10 ▶

```
10 *=$600
20  PLA
30  LDA #0
40  STA 710
50  RTS
```

Program I: Machine code routine to change colour of screen

```
10 FOR X=0 TO 6
20 READ D:POKE 1536+X,D:NEXT X
30 DATA 104,169,0,141,198,2,96
40 X=USR(1536)
```

Get it right! II

```
10 RS6 (N)
20 VGY (Y)
30 GC2 (N)
40 S4D (U)
```

Program II: Basic loader for Program I

```
10 DIM A$(3),B$(16):B$="0123456789ABCD
EF"
20 ? CHR$(125);"Input a Hex number bet
ween 00 and FF":?
30 INPUT A$:IF LEN(A$)=1 THEN A$(2,2)=
A$(1,1):A$(1,1)="0"
40 IF LEN(A$)>2 THEN ? "Only two hex d
igits, please":? :GOTO 30
50 N=1:GOSUB 80:N1=X
60 N=2:GOSUB 80:N2=X
70 ? "    ";CHR$(28);"= ";N1*16+N2:? :
GOTO 30
80 X=1
90 IF B$(X,X)=A$(N,N) THEN X=X-1:RETUR
N
100 X=X+1:IF X>16 THEN ? "UNACCEPTABLE
 HEX VALUE":? :POP :GOTO 30
110 GOTO 90
```

Get it right! II

```
10 YMH (1)    70 D97 (5)
20 YFY (W)    80 D4H (V)
30 140 (D)    90 KDA (5)
40 YKX (Q)   100 TGL (G)
50 DOM (S)   110 PJ7 (Y)
60 D4W (E)
```

Program III: Hexidecimal to Decimal converter

◀ *From Page 9*

course, that NEW doesn't wipe page 6, so your machine code routine will survive until the power is turned off.

If we were to write line 40 in English, it would go something like this: Stop processing the Basic program, execute the machine code routine whose first instruction is at address 1536, then return to the Basic program and resume at the instruction immediately following this USR statement.

The syntax of USR can be a bit confusing – what's the significance of X, for example? Well, remember that USR is a function, like PEEK or STRIG, so it needs an argument to make it work. In Program II we could have used PRINT USR(1536) or LIST USR(1536), but this would have interfered with the screen display, so instead we use X=USR(1536).

Although a number will be returned in X, it is usually of no significance, so you can regard X as a dummy variable. And of course you need not use the letter X – any variable name will do – but be careful you don't overwrite any variables you're currently using.

We'll finish this month by looking at a couple of programs which use USR, first to do something outside Basic's capacity and second to do a conventional job faster than Basic.

Program IV, which can be loaded from Basic using Program V, contains a flashing cursor routine which uses one of the internal System Timers – something that Basic can't do. It's quite a short routine, but it does the job perfectly well. Press Reset to stop the cursor flashing, and repeat the USR command at line 40 to start it going again.

Program VI is a simple Etch-a-sketch routine, loaded from Basic in Program VII. It reads the joystick, checks that screen boundaries will not be exceeded and calculates the new X and Y coordinates.

Basic could do all these things, but machine code is much faster. The GRAPHICS and PLOT commands, on the other hand, are difficult to program in machine code, so we leave these jobs to Basic, which finds them easy.

You can play around with Program VII by changing the last six DATA numbers in line 60. These control, in order, the pixel's X and Y starting position and the maximum/minimum limits for horizontal and vertical movement. By altering these values you can tailor the routine to suit other Graphics modes.

● *Next month we'll look at how USR can be made to transmit data, such as variable values or the results of arithmetical calculations, from Basic to the machine code routine.*

```
10 CDTMA2=$228
20 CDTMV2=$21A
30 CHACT=$2F3
40  *=$600
50 SETVEC
60  PLA
70  LDA #BLINK&255                  Tell the
computer where the
80  STA CDTMA2                      "blink" r
outine starts - it
90  LDA #BLINK/256                  will JSR
through this address
0100  STA CDTMA2+1                  when CDTM
V2 counts down to 0
0110  LDA #10
0120  STA DELAY                     Set blink
 rate
0130 BLINK
0140  LDA CHACT                     Read cont
ents of 755
0150  EOR #2                        Change it
 from 2 to 0,
0160  STA CHACT                     or vice v
ersa
0170   LDA DELAY                    Reset fla
sh rate every
0180   STA CDTMV2                   time the
routine is called
0190  RTS                           Return to
 Basic
0200 DELAY *=*+1
```

Program IV: Machine code flashing cursor

```
10 FOR X=0 TO 30:READ D:POKE 1536+X,D:
NEXT X
20 DATA 104,169,16,141,40,2,169,6,141,
41,2,169,10,141,31,6,173,243,2,73
30 DATA 2,141,243,2,173,31,6,141,26,2,
96
40 X=USR(1536)
```

10 TSA (R)	
20 DGV (L)	
30 UT1 (E)	
40 S4D (3)	

Program V: Basic loader for Program IV

```
10 STICK=$278
20  *=$600
30 START
40  PLA
50  LDA STICK           Read stick
60  CMP #15             If stick centered
,
70  BEQ DONE            take no action
80  STA HOLD            Store stick value
90 BIT0
0100  AND #1            Check bit 0
0110  BNE BIT1          Branch if it's '1

0120  LDA VMIN          Is there room to
0130  CMP VPOS          move up?
0140  BCS BIT2          Branch if not
0150  DEC VPOS          Otherwise VPOS=VP
OS-1
0160  JMP BIT2          Unconditional bra
nch
0170 BIT1
0180  LDA HOLD          Get stick value b
ack
0190  AND #2            Check bit 1
0200  BNE BIT2          Branch if it's '1
0210  LDA VPOS          Is there room to
0220  CMP VMAX          move down?
0230  BCS BIT2          Branch if not
0240  INC VPOS          Otherwise VPOS=VP
OS+1
0250 BIT2
0260  LDA HOLD          Get stick value b
ack
0270  AND #4            Check bit 2
0280  BNE BIT3          Branch if it's 1
0290  LDA HMIN          Is there room to
0300  CMP HPOS          move left?
0310  BCS DONE          Branch if not
0320  DEC HPOS          HPOS=HPOS-1
0330  JMP DONE          Unconditional bra
nch
0340 BIT3
0350  LDA HOLD          Get stick value b
ack
0360  AND #8            Check bit 3
0370  BNE DONE          Branch if it's 1
0380  LDA HPOS          Is there room to
0390  CMP HMAX          move right?
0400  BCS DONE          Branch if not
0410  INC HPOS          then HPOS=HPOS+1
0420 DONE
0430  RTS               Return to Basic
0440 HOLD  .BYTE 0
0450 HPOS  .BYTE 80
0460 VPOS  .BYTE 40
0470 HMAX  .BYTE 159
0480 HMIN  .BYTE 0
0490 VMAX  .BYTE 79
0500 VMIN  .BYTE 0
```

Program VI: Machine code etch-a-sketch routine

```
10 FOR A=0 TO 93:READ D:POKE 1536+A,D:
NEXT A:REM insert the machine code.
20 DATA 104,173,120,2,201,15,240,78,14
1,87,6,41,1,208,14,173,93,6,205,89
30 DATA 6,176,24,206,89,6,76,47,6,173,
87,6,41,2,208,11,173,89,6,205
40 DATA 92,6,176,3,238,89,6,173,87,6,4
1,4,208,14,173,91,6,205,88,6
50 DATA 176,24,206,88,6,76,86,6,173,87
,6,41,8,208,11,173,88,6,205,90
60 DATA 6,176,3,238,88,6,96,0,40,20,79
,0,39,0
70 GRAPHICS 5
80 COLOR PEEK(644):PLOT PEEK(1624),PEE
K(1625)
90 X=USR(1536)
100 COLOR 1:PLOT PEEK(1624),PEEK(1625)
:GOTO 80
```

10 TEX (S)	60 AHF (P)
20 FO6 (D)	70 UY8 (D)
30 AYM (O)	80 NJJ (J)
40 7TR (T)	90 S4J (K)
50 GYS (8)	100 MS6 (S)

Program VII: Basic loader for Program VI

COMPUTERSPEAK EXPLAINED

JAMES PIE unravels some of the mysteries of micro jargon

MANY newcomers to microcomputing are puzzled by the multitude of technical terms and jargon used by the so-called computer experts and sales repesentatives.

It is strange how straightforward words and phrases take on a completely different meaning when used in a computing context. So we have compiled this easy-to-read guide to computer jargon for the novice:

● *"The applications are only limited by your own imagination"* – We can't think of anything useful it can do.



NOVICE ATARI OWNER

● *"Compatible with all Atari add-ons"* – Will not work with your computer unless you know more about interfacing than we do.

● *"Standard"* – We don't know enough about other interfaces to know why it won't work with yours.

● *"Universal standard"* – We have tried it out on every Atari we could get our hands on.

● *"Industry standard"* – We copied the design from someone else, and they say it works.

● *"Guaranteed delivery within 21 days"* – A universal constant, as whenever you ask the question, delivery will always be within 21 days.

● *"Delivery will be at the end of the month"* – Another way of stating the universal constant, for the innumerate.

● *"In stock"* – We have ordered it from the manufacturers.

● *"Now in stock"* – When the closing date for the advertisement was reached three weeks ago, we were promised delivery inside a fortnight.

● *"Tomorrow's technology, today"* – It arrived here a day early.

● *"Obsolete"* – We've had it in stock for more than a week.

● *"Will be available shortly"* – We haven't actually made one yet, but can foresee no problems.

● *"Will be available later in the year"* – We discovered a few problems.

● *"Will be available sometime next year"* – We lost the blueprints.



● *"Uses your own TV as a display"* – Sometimes you may actually be able to read what is on the display as well.



● *"Comprehensive documentation"* – Roughly photocopied bundle of misspelt typescript masquerading as a manual.

● *"Extensive documentation"* – Large, poetically written tome of no technical use whatsoever.

● *"Operating system"* – Something we sell you every six months or whenever you find the bugs in the last one we sold you.

● *"The program can easily be modified to run on other versions of Atari computers"* – Sometimes seen at the end of articles: A disclaimer for any intelligence the author might have falsely indicated to the reader.

● *"User friendly"* – You are asked for every little option and parameter to see if it needs to be included. This will take at least 10 minutes and you will have to go through the whole lot again if you want to change something.

● *"Easy to use"* – The average graduate of computer science should experience no difficulty.

● *"Powerful"* – It's so good, even we can't understand it.

● *"Advanced"* – So complex, even the programmer can't understand it.

Turn to Page 12 ▶

◀ From Page 11

● *"Easily expandable"* – There's a lot of sockets on it, but we don't know what to do with them.

● *"A must for every Atari user"* – It's nothing new and we couldn't think of anything original to say about it.



● *"Buy now at specially discounted prices"* – The product is about to be discontinued.

● *"Bug"* – A feature not included in the documentation.

● *"Feature"* – A documented bug.

● *"Ram"* – Unintelligent, male herbivorous quadrupedal mammal.



● *"Rom"* – An illiterate ram.

● *"Massive ram"* – Mean looking beast, approach with extreme care.

● *"WYSIWYG"* – What you see is what you get. We don't supply the plug, the cassette lead, the instructions...

● *"WIMP"* – Any computer literate person of non-Atari persuasion.

● *"Disclaimer"* – We do not accept there are any bugs in this software preventing it from doing its job.

● *"Software"* – You must be soft in the head to buy this rubbish.

● *"Hardware"* – Software made from steel wool.

● *"Firmware"* – Another name for hardware.

● *"Shadow ram"* – Memory chips that work in the dark.

● *"Second processor"* – The first one we sold you doesn't actually enable you to do anything useful, for that you'll need a new one.



● *"Mouse"* – Small, incredibly cute, but odiferous rodent.

● "8 bit Atari" – keyboard, monitor, disc drive, tape deck, joystick and three transformers.

● *"16 bit Atari"* – Twice as many pieces as an 8 bit Atari.

Storm blows up



Product: Storm
Price: £2.99
Supplier: Mastertronic, 8-10 Paul Street, London EC2A 4JH.
Tel: 01-377 8411

THE beautiful Corrine, beloved wife of Storm the Warrior, has been captured by the evil minions of Una Cum and is being held prisoner in his laboratory somewhere within his castle.

Storm has decided to make his way there and hack and slash and generally chop anything that gets in his way.

To aid him, Storm has enlisted the help of his comrade and powerful wizard, Agravain the Undead.

Luckily for the two heroes, Una Cum has left his castle to search for a mystical box called The Fear. So off they trot to create complete havoc and destruction.

The game has a two-player option (Storm and Agravain the Undead respectively) with the heroes controlled by joystick.

You must battle your way through the game avoiding the deadly traps while watching out for Una Cum's evil minions who lurk around the castle.

The on-screen display has the score and energy level for both players at the top with the main game screen directly underneath.

Here are some useful starting points: You must collect three brooches before you are able to unlock the door to Una Cum's laboratory.

The armour will provide protection for you against Una's evil minions, while food and restorative fluids will improve your energy levels.

Various scrolls and amulets will temporarily destroy the evil horde, and the Mask magic is very powerful so use it wisely.

While Cabbalas will release traps, sometimes this will land you in trouble.

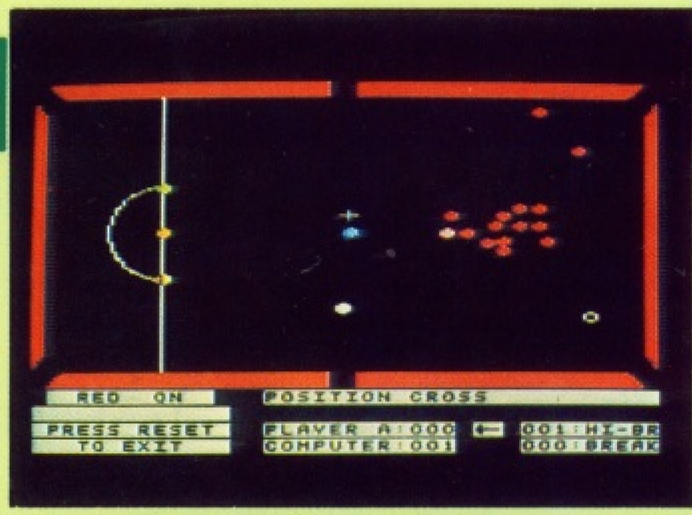
The inlay card describes this game as a thrilling, highly addictive arcade adventure – it impressed me because of the quality.

If you want a challenge but don't want to break the bank, buy Storm and see how much havoc you can cause on a peaceful sunny day.

Elizabeth Jones

Graphics	*6*
Sound	*7*
Playability	*6*
Value for money	*7*
Overall	*6*

Right on cue



Program: On Cue
Price: £1.99
Supplier: Mastertronic, 8-10 Paul Street, London EC2A 4JH.
Tel: 01-377 8411

DON'T worry if you can't decide whether you'd prefer to play a snooker or a pool simulation on your computer, On Cue gives you both of these green baize games on a single cassette. That works out at just under £1 a simulation.

And the games are good. Most of the display is taken up with an overhead view of a black (not green) table with red cushions. At the bottom of the screen is a message area used for keeping a record of the score, whose turn it is and various prompts.

The balls are clearly depicted and it is not difficult to distinguish between the colours. For example, the black ball in snooker is specially marked so that you can pick it out against the black background.

Controlling your shots (with a single joystick only) is simple and involves three stages. You are prompted by an appropriate instruction in the message area at the bottom of the screen at each step of the way.

First you move across to the point at which you are aiming. Then you select the direction of the spin. Finally you dictate the strength of the shot by setting the power meter – and away flies the ball.

From time to time it may be necessary to position the cue ball – this, too, is accomplished with a simple joystick movement. There is also an option to edit the table.

The balls move quite smoothly and while some of the collision effects are a little unpredictable – sometimes a ball may stop suddenly or continue rolling for longer than seems probable – overall the simulation is quite decent.

The cassette has been recorded so that both games are present on both sides of the tape, with snooker being first on one side and pool first on the other. A thoughtful touch.

You can opt to play against another player or the computer and the micro's skill level can be adjusted to suit your own taste.

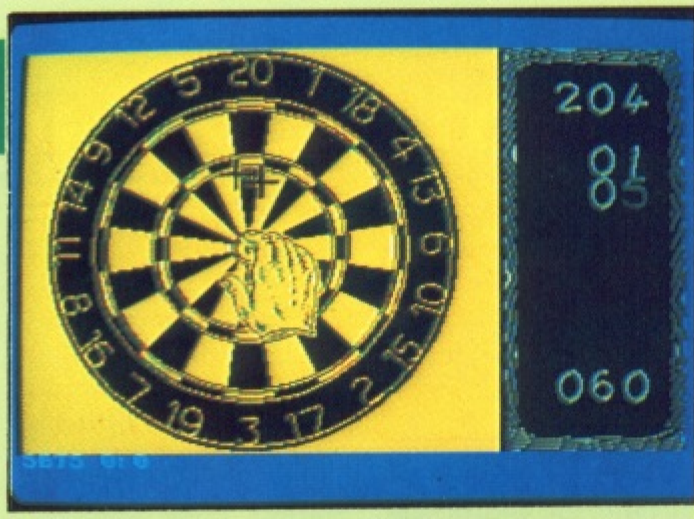
On Cue is an entertaining pool and snooker simulation.

At this low price, it represents an opportunity too good to be missed.

Bob Chappell

Sound	*6*
Graphics	*7*
Playability	*9*
Value for money	*9*
Overall	*8*

Bull's eye



Product: 180
Price: £2.99
Supplier: Mastertronic, 8-10 Paul Street, London EC2A 4JH.
Tel: 01-377 8411

IF I were to talk of the "crafty cockney", which sport would you visualise? The only possible answer could be darts and 180 is the new darts game from Mastertronic.

You have three basic options: Practice, tournament or the two-player game. The practice game is very useful and I recommend that you play it to get a feel of the joystick movements.

You are playing against the clock and have to hit the numbers in sequence from 20 to 1. This isn't easy but is fun and can improve your aim for the competition proper to come later.

In the tournament the computer can field eight different opponents. You come into the tournament at the quarter final stage and have to beat three opponents to win the world championship.

Your opponents all have improbable names such as Belly Bill, Limp-Wrist Larry and the World Champion is called Jammy Jim.

Each player has his individual style with favourite own doubles and finishing techniques. The instructions said that it is useful to work these out but it didn't improve my game greatly.

The choice of opponent is random and so you get a different game almost every time.

The main game is standard matchplay darts, where two players play against one another to see who can score 501 first. The winner must win on a two out of three basis – called a set.

You can aim at any part of the dart board but you must remember that you have to finish on a double.

You aim with the joystick. When the dartboard appears push your joystick up to set the hand in motion, all movement is by using the diagonals, and the dart is released by pressing fire.

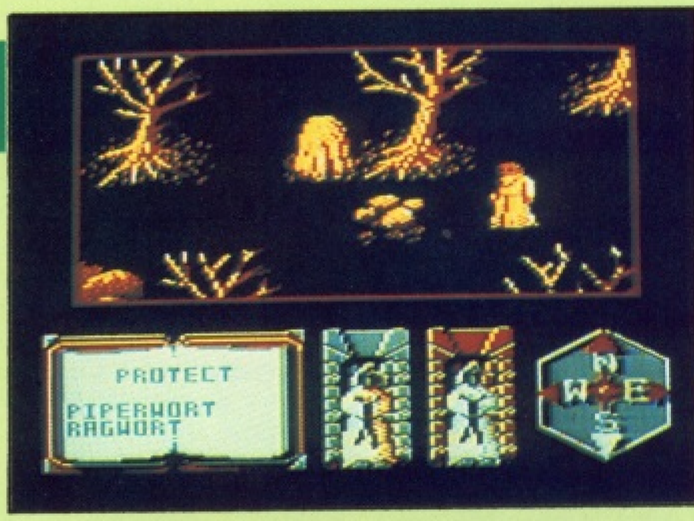
The game contains a lot of humour and is superb value for money. If you score the magic 180 the computer will let out a digitised yell of "180!".

The graphics are nice and the movement of the hand is very smooth and this game will give the enthusiast hours of lasting enjoyment, cheaply.

Ruth James

Graphics	9
Sound	9
Playability	9
Value for money	9
Overall	9

Feudin's fun



Program: Feud
Price £1.99
Supplier: Bulldog Software, 8-10 Paul Street, London EC1A 4JH.
Tel: 01-377 8411

THERE were once two brothers, Learic and Leanoric, extremely knowledgable in the arts of magic, and they lived together in peace and quiet in the small village of Little Dullford.

Then one summer Leanoric turned his brother into a frog. Not a very nice thing to do to anyone, let alone your own brother. After a week, Learic was restored to human form, but already the dark clouds of a feud were beginning to build up.

Then everything changed. The forest went quiet, then shouts, bangs and explosions erupted from the trees. Leanoric left his house to move to the other side of the village, and the feud began. And woe betide anyone who got in their way.

That's the story, so on with the game. Leanoric is now your deadly enemy, and will do his utmost to destroy you. So, as all good feuds go, you have to destroy your brother, or be destroyed.

To do so, you must travel around the kingdom (mainly in the garden of the farmer Hieke) collecting herbs in order to mix and cast spells of different results.

But the villagers, especially Hieke, don't take kindly to warring wizards fighting it out in their back yards, especially Learic (for some unknown reason), who is controlled by you.

To collect a herb, you just stand in front of it and walk towards it. Learic will then bend down and pick up the herb.

Then the page on which the herb is shown will suddenly flap into view (a nice touch). To mix a spell, you have to stand in front of the cauldron, press fire and left or right to move to the page in the spell book with the spell that is required.

Release the fire button, and bingo, the spell will be mixed, but only if you have both ingredients (shown in red). You will then be armed with that spell.

Fantastic graphics, great sound, addictive gameplay and lots and lots and lots of action-packed screens make this game a must. And for only £1.99. It may not appeal to everyone, but if you've got some time to spare play Feud. You won't be sorry.

Robert Swan

Sound	9
Graphics	9
Playability	10
Value for Money	10
Overall	10

Slightly soured



Program: Milk Race
Price: £1.99
Supplier: Mastertronic, 8 Paul Street, London EC1A 4JH.
Tel: 01-377 8411

THERE have been racing games galore on the Atari and most seem to bear more than a passing resemblance to Pole Position. Now Mastertronic has released Milk Race, the target of which is to win a cycle race around Britain.

You start in Newcastle, and must make your way down to London before a certain date in order to win the race.

The game starts with a nice piece of music, and a colourful splash over the title page. You are also presented with the option to turn the music on or off.

You begin on the line with a few other racers when the starter waves a flag, and you're off.

Well, not quite. Other racers do have a nasty tendency to cycle up behind you and knock you off.

If you do manage to pull away without mishap, you can work your way through the bike's 12 gears to gain maximum speed.

As you speed up your energy level decreases, so you must collect pints of milk, found in bottles strewn along the roadside, to replenish your falling energy stock.

These come few and far between, so when you do see one make sure you get to it before the other racers, or they'll take it.

Cars also zoom along the roads (which in itself is strange, as cars are banned from travelling along the same roads as the racers) so make sure they don't hit you, or it'll cost you another few precious moments.

Crowds watch from the roadside, but some spectators must be as fast as the racers, as they reappear every so often along the route.

The racers are all exactly the same, so it's almost impossible to tell who you are without waggling the joystick from side to side, thereby losing precious time.

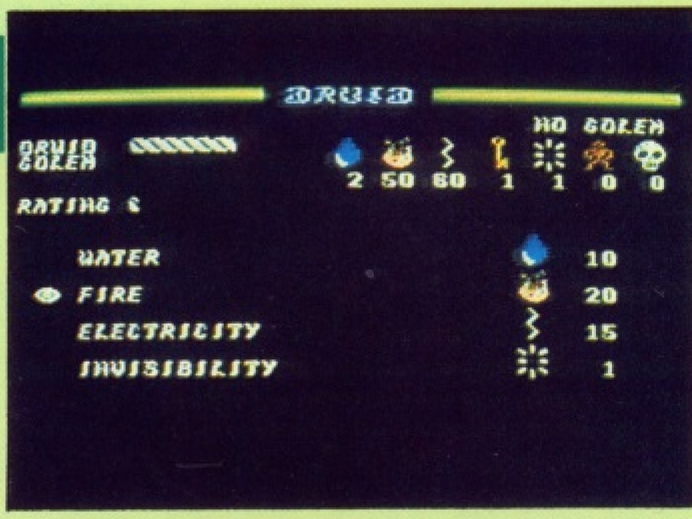
Gaining speed is extremely difficult, and when you do actually manage to collect a milk bottle, the energy level rises by a most insignificant amount.

I am more than a little disappointed.

Robert Swan

Sound	*4*
Graphics	*5*
Playability	*6*
Value for money	*4*
Overall	*5*

Spellbinding



Product: Druid
Price: £9.95 (cassette) £14.95 (disc)
Supplier: Firebird, First Floor, 64-68 New Oxford Street, London WC1A 1PS.
Tel: 01-379 6755

IN the kingdom of Belorn balance of power and peace has been held for many years. But this peace has now been upset by the arrival of four demon princes, who have appeared through an interdimensional gateway and arrived in the dungeon of the thoroughly evil Lich Acamantor.

Terror has now spread across the kingdom, and the task of their destruction has been passed into your ward.

As the last of the Great Druids you must heroicly cast aside all fears and do mortal combat with the evil ones.

You must search the lands collecting keys that allow you to travel through the eight dangerous levels, infested with hords of evil creatures including snakes, slimes, beetles and demons.

Your only weapons are the awesome spells you have at your disposal if you find the magic chests containing them.

Most effective is the golem spell, which creates a creature to protect you. You have the option of controlling the golem by joystick or having the computer control him for you.

As you move around the various levels you will find several chests. Opening them is simple – just walk on to them. You will now be able to use the spells contained within.

However, this acquisition is not without risk, as once you have removed anything from a chest the Prince of Darkness will sense that it has been opened and destroy it so that no more spells can be taken from it again.

If any of the creatures you encounter touch you they will drain your energy reserves – indicated by a bar in the top left of the screen.

To recharge your energy, Pentagrams of Life have been scattered around. By standing on them you will be partially restored. Creatures can be destroyed with spells by pressing the fire button.

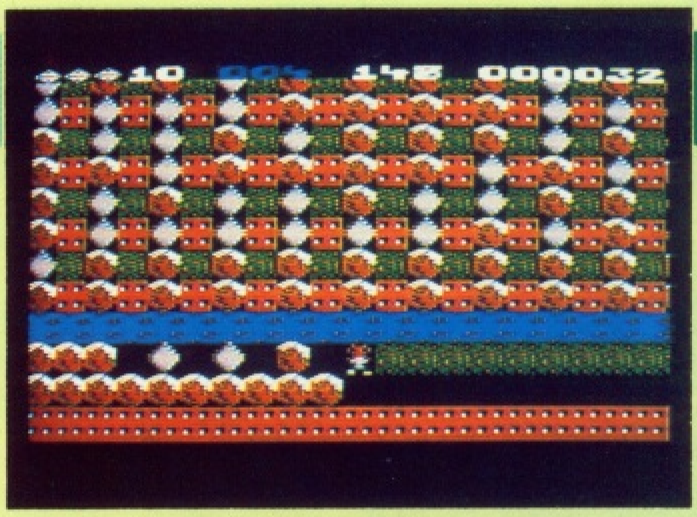
Stairs are scattered around the dungeon levels and allow you to go up or down levels.

I enjoyed Druid – an arcade style shoot-em-up, which involves thought if you want to finish. The graphics are clear, the sound acceptable, and the scrolling very smooth.

Neil Fawcett

Graphics	*8*
Sound	*6*
Playability	*8*
Value for money	*8*
Overall	*8*

Dashed good



Product: Boulderdash II: Rockford's Riot
Price: £2.99 (cassette) £4.99 (disc)
Supplier: Prism Leisure, Unit 1, Baird Road, Enfield, Middlesex EN1 1SJ.
Tel: 01-804 8100

THIS is one of those games where I would like to take the programmer by the hand and give it a good shake. Very rarely do I get addicted to a game, but this one had me playing until early in the morning.

You are met by a superb title screen and from there it gets better. The game has everything going for it, stunning graphics, superb scrolling, neat sound effects and the cutest little hero you would ever want, Rockford the rockmite.

Game play is as for the original Boulderdash and equally as addictive, and we now have it in the shops for a fantastic £2.99.

Rockford must search through each cave and collect as many jewels in as short a time as possible. Once this is done a door to an escape tunnel will appear. This is the easy part of the game, and luckily the boulders scattered around the screen fall in predictable patterns.

This does however leave the growing amoebas, fireflies and butterflies. You will have to kill them to turn them into jewels.

And a great deal of thinking and strategy is required if you want to survive.

You start with three lives and gain an extra one for every 500 points scored. Another life is also gained if you succeed in finishing a bonus screen.

There are 16 caves (A–P) to conquer each consisting of several scrolling screens, not including the four intermission screens.

Each cave has five difficulty levels and you have a choice of four caves from which you can start (A,E,I or M).

You can choose a combination of level and starting cave from the main menu using the joystick. On levels four and five you must start in cave A.

Rockford's animation is superb; if you leave him standing around for too long he stamps his foot and blinks at you.

If you haven't been initiated into the world of Rockwell here is your chance, so don't miss out.

Neil Fawcett

Sound	*9*
Graphics	*10*
Playability	*10*
Value for money	*10*
Overall	*10*

Tricky text adventure

Program: Escape Part 1 and 2
Price: £3.95 each (cassette) £4.75 (disc)
Supplier: AD400, 40 Chiltern Gardens, New Malden, Surrey KT3 6RT.

ESCAPE is a two part text adventure designed to run on smaller-memory Atari Micros (those with at least 16k).

Availability is by mail order only, Escape follows the traditional path of text adventures for limited memory machines. That is, locations, vocabulary and descriptions are necessarily restricted and input is generally of the single verb and noun variety.

However, what marks Escape for special attention is the fact that a lot of solid puzzles have been crammed into each of the two parts, making them especially good value for money.

Another point worth mentioning is that owners of smaller Ataris have been starved of good adventures, and any decent programs that try to satisfy this hunger deserve to be treated with respect.

As special agent AD400, Escape Part 1 sets you down in a foreign prison. Not only must you set about an escape attempt, but you must also make adequate preparation for Part 2.

The second part cannot be played until you have successfully completed Part 1 – you need a special password that only victory in Part 1 will produce.

You begin in the prisoner's quarters in which there is a stove and mirror. Your door is not locked, and you are free to roam the prison's inner confines.

However, escape is not going to be that easy – a guard is constantly on patrol.

While nothing nasty will happen if he catches you out of your cell, he will confiscate any object you happen to be carrying and return it to its rightful place.

And he's not the only one who will retrieve any items you are not supposed to have. The governor, mail clerk and store clerk are ever vigilant too.

Locations include a guardhouse, mess hall, kitchen, stores and offices of the mail clerk, governor and store clerk. There are other places, but most can only be accessed after you've found the entrances or unlocked locked doors.

Escape Part 1 is fairly straightforward, but by no means a walk-over. Part 2 is a shade tougher. In this you must complete your escape from the prison.

You start just outside the gatehouse. It is dark but there's a full moon and a light breeze.

In the stores nearby you'll find a map, compass, bottle, candle, wire cutters, mail-bag, matches, coal dust and chocolate – perhaps you amassed this collection during Part 1?

There are some neat puzzles in this adventure, my favourite being the one which involves making your face less likely to be seen in the dark. As the author told me, all you need is logic.

Escape Parts 1 and 2 are good value for money, containing as they do a good variety of puzzles and an enjoyable challenge.

You can obtain even better value if you buy the two parts together (tape £6.75, disc £7.75).

These are two little gems you would be well advised to acquire.

Bob Chappell

Presentation	*7*
Atmosphere	*7*
Puzzlement	*8*
Value for money	*8*
Overall	*8*

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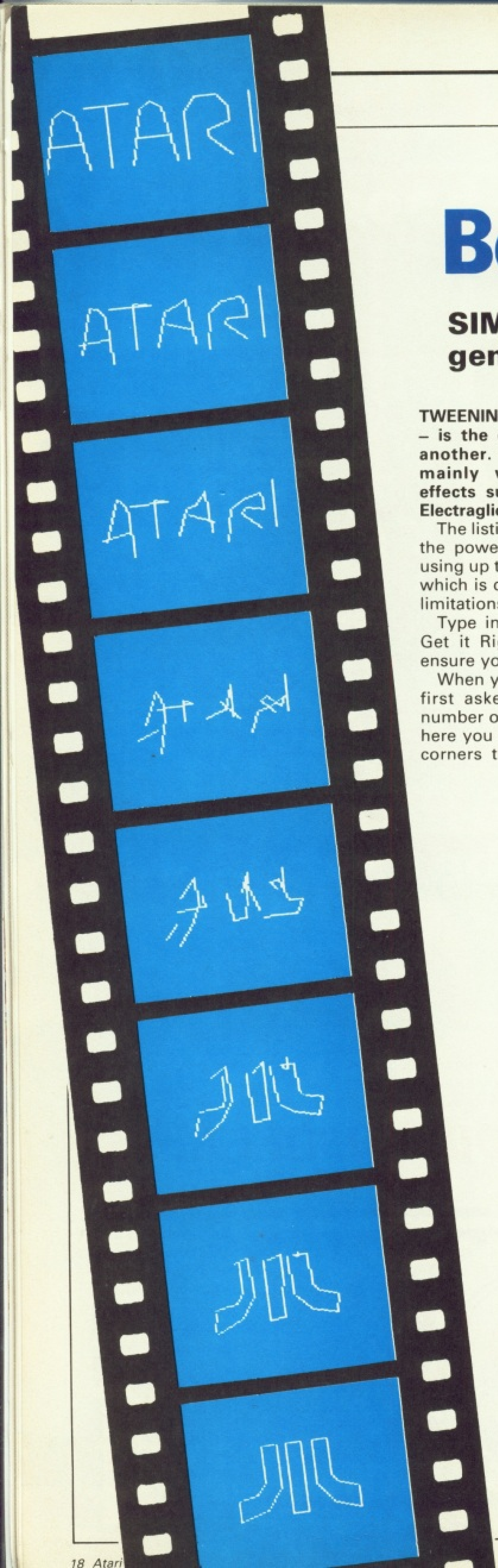
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Between shapes

SIMON REASON introduces you to the gentle art of tweening on your Atari

TWEENING – short for in betweening – is the changing of one shape to another. The shapes involved are mainly wireframe and amazing effects such as the title screen in Electraglide can be achieved.

The listing presented here gives you the power to tween several objects, using up to about 50 points, a number which is determined only by memory limitations.

Type in Listing I and use the new Get it Right checksum program to ensure you have made no errors.

When you run the program you are first asked to enter the maximum number of points for your shapes and here you must type in the number of corners the most irregular one will have. The display will then show a flashing dot on the screen which can be moved around by the cursor keys or a joystick. Pressing Fire on the joystick or Return on the keyboard will set that position as a point of your shape.

To help you draw the shapes you can add a grid of lines or dots. Pressing G will display a grid of lines 10 pixels apart and pressing D will display a grid of dots each five pixels apart. Pressing the same key again will toggle the grid off.

To tween two shapes which have different numbers of points, the shape which has the least number will have one corner as two corners, so it will appear that the shape has one side less that it really has (see Figure I).

	MAIN VARIABLES
MAXX,MAXY	Maximum x and y coordinates for the drawing area
MINX,MINY	Minimum x and y coordinates for the drawing area
P	Number of points to each shape
X,Y	Current x and y positions of the drawing cursor
ACTUAL	Colour of the pixel under the cursor
COL	Colour that the line to the current point will be
AX(),AY()	Location of each point for shape A
BX(),BY()	Location of each point for shape B
HZ()	Horizontal step for moving between AX and BX
VT()	Vertical step for moving between AY and BY
PX(),PY()	Points which will form the current shape during tweening
COL()	Colour of the line to each point of both shapes
PKE	The PEEK of location 764 to check for a key press
ST	The value for the joystick (STICK(0))
X1,Y1	Temporary coordinates for the cursor when it is being moved
MX	Number of frames in the tweening minus 1 (set to 12)
STORE	Location of the current frame being displayed or stored
S	Size of the delay during animation of the tweening
GRID	Flag indicating whether the grid is on or off
DOTS	Flag indicating whether the dots are on or off

This can be done with any number of points, so that any wireframe shape may be tweened to any other.

Pressing C before setting a point on the screen will toggle the colour of the line to that point between white and black so you can draw invisible lines as part of your display.

This may only be done with the first shape and when the second is being drawn, then the colour which has already been selected on the first shape will be shown at the bottom of the screen.

An invisible line will not overwrite a white line that has been drawn so it is possible to tween more than one object. Each object tweened is connected by an invisible line. The current colour, point and shape number are displayed in the text window below the drawing.

Once both the objects have been drawn another sub-menu will appear giving you the option to join up the first and last points of the shapes or break them so that they are not joined up. The menu tells you whether these points are currently joined.

Once everything has been set up the computer takes control. Initially it draws your two shapes and joins each point to each corresponding point, ignoring invisible lines. This shows the path each point should take.

Then it asks you to press a key, and begins calculating the tweening. This is the slow part of the program.

Each point is moved, and its new location displayed on the screen as a shape. This screen is stored in memory for recall later. This process is repeated 13 times, and may take quite a while as each point is recalculated. On finishing, the program proceeds to animate the tweening at high speed.

Pressing < will slow the animation down and > will increase the speed. Pressing any other key will freeze animation, and transfer you to the last menu, which allows you to animate the tweening again (R), re-run the program with new shapes (C) or quit (Q).

If you don't want to type the points each time you run the program, Listing II adds load and save features to it. Unfortunately it also restricts the number of usable points to about 30.

To merge this new routine with Listing I type it in alone and list it to tape or disc using LIST"C:" or LIST-"D:filename". Then load Listing I and merge the new lines using ENTER"C" or ENTER" D:filename".

When you run the new program you will be prompted at the appropriate places to load or save sets of points if you wish.

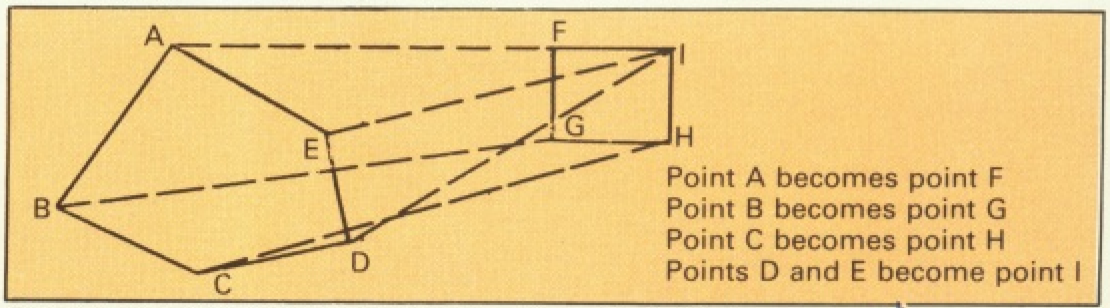


Figure I: To tween a five-sided object to a four-sided object

So that's how to tween one shape into another. You can create fascinating displays that will keep your friends mesmerised for hours.

Turn to Page 20 ►



LISTING I BREAKDOWN

Lines	Description
40	Sets up the machine code routines
50	Uses the subroutine at lines 5000 onwards for input of shapes
120-150	Draw each shape, joining each relevant point, and ignoring invisible lines
160-170	Wait for a key to be pressed
200-240	Calculate the size of the step for each point
250	Sets up the values which will make up the points to the shape at each stage
260-280	Draw the first shape and stores it as the first frame in memory
290-360	The main tweening part of the program where 12 further frames are calculated
365	Uses the routine found at 2000 to animate smoothly the stored frames
370-440	A simple menu
1000-1020	Two machine code routines for page-flipping taken from the July issue of *Atari User* to give smooth animation
2000-2090	Animation routine
5000-5350	Input the objects
5010	Sets up the size of the drawing area
5020	INPUTs the number of points, checking for errors
5026	Sets up the x and y coordinates for the cursor, the the colour under the cursor and the colour the current line will be drawn
5030	DIMensions the variables for the points of the shapes
5035	Uses the subroutine at 6220 to draw a frame for the drawing area
5052	Indicates which number point will be set
5055-5057	Show the current line colour if the second shape is being drawn
5058,5059	Show which colour the line will be if you press C when the first shape is being drawn
5050,5061	Take joystick and keyboard responses and also plot the current point with the correct colour
5070-5100	Move the cursor and checks for D or G pressed
5110	Takes the new colour of the pixel under the cursor if the cursor has been moved
5120-5140	Flash the cursor
5145	Checks to see if Fire or Return has been pressed
5148,5149	Change the colour of the line to the point to be set
5160	Sets the colour of the point under the cursor to 1
5170	Assigns the point set to the shape if the first shape is being drawn
5180	Assigns the point set to the shape if the second shape is being drawn
5190	If the first point is being drawn, no line is drawn to it
5200-5230	Draw a line of the appropriate colour from the last point to the current point
5250	Completes the loop for the next point
5255-5257	Join up the first and last points of the shape if the last line is not invisible
5260	Repeats the loop for the next shape
5270-5350	Check to see if you want the first and last points joined up
6220-6310	Draw a border to the work area
6900,6910	Toggle the variable *dots* which indicates whether the dot pattern is on or off
6920	Draws the dot pattern and the border
7000,7100	Turn the variable *grid* on or off
7020	Draws the grid and the border

◀ **From Page 19**

Listing I: Basic Tweening program

```
10 REM TWEENING
20 REM BY SIMON REASON
30 REM (c)ATARI USER
39 REM SET UP MACHINE CODE
40 FOR R=0 TO 81:READ A:POKE 1536+R,A:
NEXT R
49 REM GET POINTS
50 GOSUB 5000
120 GRAPHICS 14:COLOR 1:SETCOLOR 2,0,0
:STORE=66
125 REM DRAW SHAPES IGNORING COLOURS.
130 FOR R=1 TO P-1:PLOT AX(R),AY(R):DR
AWTO AX(R+1),AY(R+1):NEXT R:DRAWTO AX(
1),AY(1)
140 FOR R=1 TO P-1:PLOT BX(R),BY(R):DR
AWTO BX(R+1),BY(R+1):NEXT R:DRAWTO BX(
1),BY(1)
150 FOR R=1 TO P:PLOT AX(R),AY(R):DRAW
TO BX(R),BY(R):NEXT R
160 ? CHR$(125):? "Press a key...":POK
E 764,255
170 IF PEEK(764)=255 THEN 170
200 MX=12:REM NUMBER OF STEPS
210 FOR R=1 TO P
220 HZ(R)=(BX(R)-AX(R))/MX:REM CALCULA
TE HORIZONTAL STEP
230 VT(R)=(BY(R)-AY(R))/MX:REM CALCULA
TE VERTICAL STEP
240 NEXT R
250 FOR R=1 TO P:PX(R)=AX(R):PY(R)=AY(
R):NEXT R
255 GRAPHICS 14:SETCOLOR 2,0,0:COLOR 1
259 REM DRAW FIRST SHAPE
260 FOR T=1 TO P-1:COLOR 1:IF COL(T+1)
=1 THEN PLOT PX(T),PY(T):DRAWTO PX(T+1
),PY(T+1)
270 NEXT T:IF COL(1)=1 THEN DRAWTO PX(
1),PY(1)
280 A=USR(1536,STORE):STORE=STORE+5
290 FOR R=1 TO 12
300 FOR T=1 TO P
310 PX(T)=PX(T)+HZ(T)
320 PY(T)=PY(T)+VT(T)
330 NEXT T
340 GRAPHICS 14:SETCOLOR 2,0,0:COLOR 1
349 REM DRAW EACH TWEENING STEP
350 FOR T=1 TO P-1:COLOR 1:IF COL(T+1)
=1 THEN PLOT PX(T),PY(T):DRAWTO PX(T+1
),PY(T+1)
351 NEXT T:IF COL(1)=1 THEN DRAWTO PX(
1),PY(1)
355 A=USR(1536,STORE):STORE=STORE+5
360 NEXT R
365 GOTO 2000
369 REM OPTIONS
370 ? "R)Repeat tweening,C)Continue wi
th new co-ordinates,or Q) to Quit."
375 POKE 764,255
380 OPEN #1,4,0,"K:":GET #1,A:CLOSE #1
390 IF A>96 THEN A=A-32
400 IF A=82 THEN 365
410 IF A=67 THEN RUN
420 IF A=81 THEN END
440 GOTO 380
999 REM MACHINE CODE DATA
1000 DATA 104,104,104,141,25,6,169,72,
141,21,6,169,148,141,22,6,160,0,162,0,
189,72,153,157,0,141,232,208,247
1005 DATA 238,25,6,238,22,6,200,192,5,
208,234
1010 DATA 96,104,104,104,141,63,6,169,
72,141,65,6,169,148,141,66,6,160,0,162
,0,189,0,117,157,72,153,232,208,247
1020 DATA 238,63,6,238,66,6,200,192,5,
208,234,96
1999 REM DISPLAY TWEENING
2000 GRAPHICS 14:SETCOLOR 2,0,0:COLOR
1:? CHR$(125)
2001 ? "Press any key to continue...":
? "except: < and > to slow down or spe
ed up the Tweening.":POKE 764,255
2005 S=8
2010 STORE=66:FOR R=1 TO 13:A=USR(1577
,STORE):STORE=STORE+5:GOSUB 2050:NEXT
R
2030 FOR R=1 TO 13:A=USR(1577,STORE):S
TORE=STORE-5:GOSUB 2050:NEXT R
2040 GOTO 2010
2050 FOR T=1 TO S:IF PEEK(764)=255 THE
N NEXT T:RETURN
2059 REM SLOW DOWN
2060 IF PEEK(764)=54 THEN S=S+1:POKE 7
64,255
2069 REM SPEED UP
2070 IF PEEK(764)=55 AND S>0 THEN S=S-
1
```

```
2075 IF PEEK(764)=55 THEN POKE 764,255
2080 IF PEEK(764)<>255 THEN POP :GOTO
370
2090 NEXT T:RETURN
4999 REM DRAW TWO OBJECTS (A) AND (B)
ON SCREEN
5000 GRAPHICS 0:SETCOLOR 2,0,0
5010 MINY=46:MAXX=157:MINX=2:MAXY=113:
REM SIZE OF DRAWING AREA.
5020 ? "How many points";:INPUT P:IF P
<2 OR P<>INT(P) OR P>50 THEN 5020
5026 X=80:Y=74:ACTUAL=0:COL=1
5029 REM DIMENSION ACCORDING TO NUMBER
 OF POINTS.
5030 DIM AX(P),AY(P),BX(P),BY(P),HZ(P)
,VT(P),PX(P),PY(P),COL(P)
5035 GOSUB 6220
5039 REM LOOP FOR TWO SHAPES.
5040 FOR SHAPE=1 TO 2
5050 FOR R=1 TO P
5052 ? CHR$(125):? "This is point ";R;
" of shape ";SHAPE;" ."
5054 ? "Use joystick and cursor keys t
o move, and press fire to set a point.
"
5055 IF SHAPE=1 THEN 5058
5056 ? "This line will be ";:IF COL(R)
=1 THEN ? "white";:GOTO 5060
5057 ? "black";:GOTO 5060
5058 IF COL=0 THEN ? "Or 'c' to make p
lotting colour white";
5059 IF COL=1 THEN ? "Or 'c' to make p
lotting colour black";
5060 ST=STICK(0):COLOR ACTUAL:PLOT X,Y
5061 PKE=PEEK(764):POKE 764,255
5065 X1=X:Y1=Y
5069 REM MOVEMENT
5070 IF (ST=14 OR ST=10 OR ST=6 OR PKE
=14) AND Y>MINY THEN Y=Y-1
5075 IF PKE=58 THEN GOSUB 6900
5076 IF PKE=61 THEN GOSUB 7000
5080 IF (ST=9 OR ST=13 OR ST=5 OR PKE=
15) AND Y<MAXY THEN Y=Y+1
5090 IF (ST=10 OR ST=11 OR ST=9 OR PKE
=6) AND X>MINX THEN X=X-1
5100 IF (ST=6 OR ST=7 OR ST=5 OR PKE=7
) AND X<MAXX THEN X=X+1
5110 IF X<>X1 OR Y<>Y1 THEN LOCATE X,Y
,ACTUAL
5120 IF ACTUAL=0 THEN AP=1
5130 IF ACTUAL<>0 THEN AP=0
5140 COLOR AP:PLOT X,Y
5144 REM SET A POINT
5145 IF STRIG(0)=0 OR PKE=12 THEN 5160
5146 IF SHAPE=2 THEN 5150
5147 REM TOGGLE COLOURS
5148 IF PKE=18 AND COL=1 AND SHAPE=1 T
HEN COL=0:GOTO 5052
5149 IF PKE=18 AND COL=0 AND SHAPE=1 T
HEN COL=1:GOTO 5052
5150 GOTO 5060
5160 ACTUAL=1
5170 IF SHAPE=1 THEN AX(R)=X:AY(R)=Y:A
CTUAL=1:COL(R)=COL:COLOR COL
5180 IF SHAPE=2 THEN BX(R)=X:BY(R)=Y:A
CTUAL=1:COLOR COL(R):GOTO 5220
5190 IF R=1 OR COL=0 THEN 5250
5200 IF R>1 THEN PLOT AX(R-1),AY(R-1):
DRAWTO X,Y:GOTO 5250
5220 IF R=1 OR COL(R)=0 THEN 5250
5230 IF R>1 THEN PLOT BX(R-1),BY(R-1):
DRAWTO X,Y
5250 NEXT R
5255 IF COL(1)=0 THEN 5260
5256 IF SHAPE=1 THEN COLOR 1:DRAWTO AX
(1),AY(1)
5257 IF SHAPE=2 THEN COLOR 1:DRAWTO BX
(1),BY(1)
5260 NEXT SHAPE:? CHR$(125)
5270 ? "Do you want to have the last a
nd firstpoints join up?(Yes,No,Ignore)
.        They are currently";
5280 IF COL(1)=0 THEN ? " NOT";
5290 ? " joined up.";
5300 POKE 764,255
5310 IF PEEK(764)=255 THEN 5310
5320 IF PEEK(764)=43 THEN COL(1)=1:GOT
O 5350
5330 IF PEEK(764)=35 THEN COL(1)=0:GOT
O 5350
5340 IF PEEK(764)<>13 THEN 5300
5350 POKE 764,255:RETURN
6210 REM SET UP GRAPHICS 14
6220 GRAPHICS 14:COLOR 1:POKE 708,14:P
OKE 710,0
6230 POKE 752,255
6260 PLOT 0,44:DRAWTO 159,44:DRAWTO 15
9,114
6280 DRAWTO 0,114:DRAWTO 0,44
6290 PLOT 1,45:DRAWTO 158,45:DRAWTO 15
8,115
6300 DRAWTO 1,115:DRAWTO 1,45
6310 RETURN
6900 IF DOTS=1 THEN COLOR 0:DOTS=0:GOT
O 6920
6910 COLOR 1:DOTS=1
6920 FOR Q=0 TO 155 STEP 5:FOR S=44 TO
 114 STEP 5:PLOT Q,S:NEXT S:NEXT Q:COL
OR 1:GOSUB 6260:RETURN
7000 IF GRID=1 THEN COLOR 0:GRID=0:GOT
O 7020
7010 COLOR 1:GRID=1
7020 FOR Q=0 TO 150 STEP 10:PLOT Q,44:
DRAWTO Q,114:NEXT Q:FOR Q=44 TO 114 ST
EP 10:PLOT 0,Q:DRAWTO 159,Q:NEXT Q
7030 COLOR 1:GOSUB 6260:RETURN
```



Get it right! II

10 CP1 (Y)	280 6WR (W)	1005 70C (8)
20 CP2 (3)	290 U7H (7)	1010 AAW (2)
30 CP3 (X)	300 T3Y (F)	1020 7NL (W)
39 DT3 (7)	310 FFP (G)	1999 EWN (V)
40 T5U (7)	320 EVD (X)	2000 3M4 (N)
49 DT4 (S)	330 Q73 (J)	2001 X5L (4)
50 RHN (R)	340 F4L (C)	2005 D6F (R)
120 1S1 (7)	349 DWU (7)	2010 HS7 (5)
125 DES (9)	350 DU1 (J)	2030 6HC (2)
130 XVF (9)	351 W9J (1)	2040 P5E (9)
140 Y6N (2)	355 6US (W)	2050 DNF (9)
150 P49 (V)	360 QC3 (L)	2059 DJP (D)
160 H4J (U)	365 RU9 (3)	2060 NMG (3)
170 LJE (V)	369 E5U (F)	2069 DLP (6)
200 TUA (E)	370 4KF (K)	2070 9JY (D)
210 T7V (3)	375 TTG (P)	2075 52G (2)
220 WUW (1)	380 30D (5)	2080 FTQ (R)
230 X7W (2)	390 A8L (7)	2090 5XF (H)
240 Q32 (D)	400 4W3 (K)	4999 EWR (M)
250 TUX (P)	410 D63 (4)	5000 UKF (T)
255 FKK (D)	420 9T3 (S)	5010 9A5 (F)
259 E1T (1)	440 R5A (G)	5020 3SY (G)
260 DYO (Q)	999 EK1 (G)	5026 20N (6)
270 WGH (7)	1000 75E (F)	5029 DCS (5)

5030 KPF (Q)	5120 QQU (S)	5280 D6X (C)
5035 SSM (U)	5130 PRM (H)	5290 SYF (X)
5039 DES (R)	5140 EMG (F)	5300 Q6L (R)
5040 HM3 (3)	5144 DFS (E)	5310 SXL (P)
5050 WLJ (1)	5145 4PT (3)	5320 J9K (D)
5052 P5Y (O)	5146 G22 (J)	5330 J7K (Q)
5054 5MD (M)	5147 DJS (K)	5340 TLC (L)
5055 FY2 (6)	5148 DGM (T)	5350 8HY (G)
5056 RPD (L)	5149 DHP (M)	6210 D8T (G)
5057 R6X (X)	5150 PMO (9)	6220 SCN (S)
5058 DHV (U)	5160 V3P (H)	6230 Q6M (V)
5059 U8L (J)	5170 3U2 (G)	6260 HKQ (8)
5060 P3A (L)	5180 5E6 (C)	6280 T67 (G)
5061 S43 (X)	5190 N54 (Q)	6290 HWT (N)
5065 VN3 (A)	5200 TCG (6)	6300 SY8 (J)
5069 DLS (8)	5220 UAK (P)	6310 VRQ (K)
5070 WA8 (P)	5230 270 (G)	6900 P6Q (S)
5075 RW5 (P)	5250 NUW (E)	6910 7R8 (S)
5076 RNW (G)	5255 Q1K (D)	6920 6WW (N)
5080 S99 (V)	5256 Y7U (D)	7000 L5T (M)
5090 TYJ (X)	5257 YCG (H)	7010 6M8 (H)
5100 ACO (U)	5260 GT8 (X)	7020 MUH (C)
5110 1QV (7)	5270 OTX (3)	7030 V57 (W)

Listing II: Disc load/save options to be merged with Listing I

```
370 ? "R)Repeat tweening,C)Continue wi
th new co-ordinates, Q) to Quit, or S)
 to    save tween."
405 IF A=83 THEN GOSUB 6700:GOTO 380
5000 GRAPHICS 0:SETCOLOR 2,0,0:DIM A$(
40)
5005 ? "Press 'L' to load a saved twee
n, or   press 'N' for a new shape."
5006 IF PEEK(764)=255 THEN 5006
```

Turn to Page 22 ►

◀ From Page 21

```
5007 IF PEEK(764)=Ø THEN GOSUB 65ØØ:RE
TURN
5008 IF PEEK(764)<>35 THEN 5ØØ5
5009 POKE 764,255
5010 MINY=46:MAXX=157:MINX=2:MAXY=113:
REM SIZE OF DRAWING AREA.
5075 IF PKE=58 THEN GOSUB 69ØØ
5076 IF PKE=61 THEN GOSUB 7ØØØ
65ØØ POKE 764,255:? CHR$(125);"Please
input load file name (includingdevice)
-Press return to exit."
65Ø5 INPUT A$:IF LEN(A$)=Ø THEN ? CHR$
(125);:GOTO 5ØØ5
65Ø7 IF LEN(A$)<2 THEN 65ØØ
65Ø9 IF LEN(A$)<3 AND A$(2,2)<>":" THE
N 65ØØ
651Ø IF LEN(A$)<3 THEN 652Ø
6515 IF A$(2,2)<>":" AND A$(3,3)<>":"
THEN 65ØØ
652Ø TRAP 659Ø
653Ø OPEN #1,4,Ø,A$:GET #1,P
654Ø DIM AX(P),AY(P),BX(P),BY(P),HZ(P)
,VT(P),PX(P),PY(P),COL(P)
655Ø FOR R=1 TO P:GET #1,A:AX(R)=A:GET
 #1,A:AY(R)=A:GET #1,A:BX(R)=A:GET #1,
A:BY(R)=A:GET #1,A:COL(R)=A:NEXT R
656Ø CLOSE #1
657Ø TRAP 4ØØØØ
658Ø RETURN
659Ø CLOSE #1:? "Disk error-press a ke
y to re-try.":POKE 764,255
66ØØ IF PEEK(764)=255 THEN 66ØØ
661Ø GOTO 65ØØ
67ØØ POKE 764,255:? CHR$(125);"Please
input save file name (includingdevice)
-Press return to exit."
67Ø5 INPUT A$:IF LEN(A$)=Ø THEN ? CHR$
(125);:GOTO 37Ø
67Ø7 IF LEN(A$)<2 THEN 67ØØ
67Ø9 IF LEN(A$)<3 AND A$(2,2)<>":" THE
N 67ØØ
671Ø IF LEN(A$)<3 THEN 672Ø
6715 IF A$(2,2)<>":" AND A$(3,3)<>":"
THEN 67ØØ
672Ø TRAP 679Ø
673Ø OPEN #1,8,Ø,A$:PUT #1,P
675Ø FOR R=1 TO P:PUT #1,AX(R):PUT #1,
AY(R):PUT #1,BX(R):PUT #1,BY(R):PUT #1
,COL(R):NEXT R
676Ø CLOSE #1
677Ø TRAP 4ØØØØ
678Ø GOTO 37Ø
679Ø CLOSE #1:? "Disk error-press a ke
y to re-try.":POKE 764,255
68ØØ IF PEEK(764)=255 THEN 68ØØ
681Ø GOTO 67ØØ
69ØØ IF DOTS=1 THEN COLOR Ø:DOTS=Ø:GOT
O 692Ø
691Ø COLOR 1:DOTS=1
692Ø FOR Q=Ø TO 155 STEP 5:FOR S=44 TO
 114 STEP 5:PLOT Q,S:NEXT S:NEXT Q:COL
OR 1:GOSUB 626Ø:RETURN
7ØØØ IF GRID=1 THEN COLOR Ø:GRID=Ø:GOT
O 7Ø2Ø
7Ø1Ø COLOR 1:GRID=1
7Ø2Ø FOR Q=Ø TO 15Ø STEP 1Ø:PLOT Q,44:
DRAWTO Q,114:NEXT Q:FOR Q=44 TO 114 ST
EP 1Ø:PLOT Ø,Q:DRAWTO 159,Q:NEXT Q
7Ø3Ø COLOR 1:GOSUB 626Ø:RETURN
```

Get it right! II

37Ø	LYK (5)	652Ø	Q9Ø (R)	673Ø	H9W (C)
4Ø5	4TV (6)	653Ø	GRE (S)	675Ø	PV6 (1)
5ØØØ	AVO (W)	654Ø	LDG (C)	676Ø	STY (X)
5ØØ5	JOA (R)	655Ø	CAG (Q)	677Ø	QLH (T)
5ØØ6	SNL (Q)	656Ø	SKY (9)	678Ø	Q61 (4)
5ØØ7	PDC (G)	657Ø	QCH (D)	679Ø	7HN (H)
5ØØ8	T9G (F)	658Ø	WFQ (F)	68ØØ	TLV (O)
5ØØ9	Q3L (8)	659Ø	78N (U)	681Ø	QF1 (U)
5Ø1Ø	9A5 (V)	66ØØ	TAV (D)	69ØØ	P6Q (H)
5Ø75	RW5 (V)	661Ø	Q41 (H)	691Ø	7R8 (H)
5Ø76	RNW (5)	67ØØ	J5M (3)	692Ø	6WW (V)
65ØØ	HTX (8)	67Ø5	XKH (U)	7ØØØ	L5T (W)
65Ø5	XMR (S)	67Ø7	LY3 (C)	7Ø1Ø	6M8 (S)
65Ø7	LQ1 (A)	67Ø9	D3J (N)	7Ø2Ø	MUH (2)
65Ø9	CLJ (M)	671Ø	M24 (5)	7Ø3Ø	V57 (M)
651Ø	LT2 (7)	6715	AG8 (G)		
6515	A68 (D)	672Ø	QLO (T)		

Get it right! II

André Willey presents a new superfast checksum utility

THE single most common topic cropping up in your letters must be that of mistakes made when typing in programs. Many of you, can't seem to get to grips with our checksum program – particularly with LISTing your program, loading and running Get It Right and then having to re-load the original program before you can make any changes.

One or two of you have passed adverse comments about the speed with which the checksums appear on the screen.

Over the past few months your faithful technical editor has been working his way through all the letters and comments on the subject and after much research – I can now proudly present the great new all-singing, all-dancing Get It Right! – Version II.

The first major difference is that GIR II is written completely in machine code for much greater speed. Also there is no need for you to constantly save and reload your programs since GIR II sits permanently in memory and is always ready for use.

In addition it does not require the use of page six – or indeed any of the zero-page locations – thus making it compatible with almost any program you might wish to type in.

The first thing you will need to do is type in Program I. This is a fairly simple Basic program which will create a boot cassette or autorun disc containing the GIR II routine itself.

We have printed – for the last time – the old Get It Right! checksum table so you can make sure that you have typed it in correctly. Don't worry too much if you still haven't mastered the old system, as this program will not continue if you've mistyped any of the data lines.

When you're sure you've typed it in correctly, run the program and you will be asked if you want to make a tape or disc version. Press C or D accordingly and the computer will prepare the machine code for that version. This will take about 45 seconds.

Cassette users should now place a fresh tape in the recorder and wind it to the beginning. When you hear two beeps press the Record and Play buttons followed by the Return key. The computer will create a tape version of GIR II for you, again taking another 45 seconds.

Disc users should make sure that there is a formatted Dos disc in drive one with at least 10 free sectors available for the AUTORUN.SYS file which will be created. This disc will become your new boot disc, so you should have already written the Dos files to it (Option H on the Dos 2.5 menu).

GIR II has also been designed to work with most types of Dos with a LOMEM below $3000 (such as Dos/XL or SpartaDos) so you may wish to alter the filename on line 3030 to suit your preferences. SpartaDos users, for example, could call it D:GIR.COM and access it only when required by typing GIR from the command processor.

From this point on you won't need the Basic program again and you should always use your new Get It Right II master disc or boot tape each time you power up the system. The disc version is automatic – simply turn the computer on with that disc in drive one and Dos and GIR II will both load into memory.

Cassette users should place their new GIR II tape in the recorder, rewind it to the beginning and press Play. Then turn the computer on while holding down the Start button and press Return after the beep. Get It Right II will then load into memory and initialise itself.

After loading is complete you will see the message:

GET-IT-RIGHT-II – Loaded OK

followed by the READY prompt.

Obtaining a checksum from the new system couldn't be simpler, either. After you've typed in the Basic program you wish to check you should enter the command:

LIST "G:"

and the checksum will appear. To stop and start it simply use the Control+1 keys in the same way as you would with any other listing – or hit the Break button to abort it completely.

You can alternatively specify output to a printer by entering:

LIST "G:P"

To show you the new type of checksum we have printed the ones for GIR II along with the old version on Page 26 after the program listings.

You will notice that each line consists of three parts. The first is obviously the line number in question, which is followed by a three digit checksum value. This may consist of both numbers and letters, but don't worry – this time there won't be any eights to confuse with zeros, or indeed any other tricky digits such as one and the letter I, zero and the letter O or two and the letter Z.

The final digit on the line (enclosed in brackets) is a special cumulative check digit. This gives the running total of the checksums given so far in the listing. Thus you can look down the listing until you find a mis-match with this last digit to help you find an error.

Any lines following one containing an error will also have the wrong final

Turn to Page 25 ▶



AUTUMN ACTION
from
Red Rat
Out NOW
Out NOW
Red Rat
4 STAR COMPILATION
Volume 1
LASER HAWK
ESCAPE FROM DOOMWORLD
Red Rat
ATARI
4 STAR COMPILATION Vol 1
SPEED RUN
Screen shot from ST version
available early 1988
Red Rat
4 STAR COMPILATION
Volume 2
Disc Hopper
Screaming Wings
The Search
Crumble's Crisis
ATARI
4 STAR COMPILATION Vol 2
Coming
SOON!
Little Devil
LEAPSTER
NIGHTMARES
POTHOLE
PANIC
All titles are for
Atari XL/XE
Disk £9.95
Tape £7.95
Obtainable from your local software store or in case of difficulty direct from
Red Rat Software
11 FENNEL STREET, MANCHESTER M4 3DU. Telephone 061 - 834 4941

◀ *From Page 23*

check digit, but if a given line is correct the three digit part of the code should always match that published with the program in question.

To make future typing easier for you, anything coming after a REM statement will be ignored by GIR II. Thus:

10 REM THE FIRST LINE

and

10 REM

would return the same checksum – CP1. However, don't feel tempted to leave the line out completely as the program might use it in a GOTO or GOSUB statement.

You can even use GIR II to test individual lines – such as a block of DATA statements you have been having trouble with. To checksum a single line (say 1000) type:

LIST "G:",1000

and to check a block of lines (say 100 to 500) type:

LIST "G:",100,500

However, don't forget that the cumulative check digit will be incorrect in such cases, as it can't know what the values from the previous lines should have been. When checking selected lines of a program, ONLY use the main three digit checksum.

Both cassette and disc versions are protected from accidental user erasing – typing NEW or pressing System Reset will not harm them. In fact apart from the fact that your free memory space has been reduced by 882 bytes, you will probably never even notice it's there.

Dos 2.0 and 2.5 users should note that loading the DUP.SYS command menu will overwrite the memory space used by Get It Right II. In order to retain GIR II when returning to Basic you should make sure that you have enabled the MEM.SAV facility on your boot disc (this is the default condition when using Dos 2.5 with a 130XE ramdisc).

So that's it – our new, faster and much improved checksum program. All listings from this issue onwards will be accompanied by the new checksums – so hopefully more of you will find it even easier to Get It Right!

Program I: Get It Right version II

```
1 REM ******************************
2 REM
3 REM GET-IT-RIGHT: VERSION 2.0
4 REM COPYRIGHT:    ATARI USER 1987
5 REM WRITTEN BY:   ANDRE WILLEY
6 REM VERSION DATE: 18/9/87
7 REM
8 REM ******************************
9 REM
50 DIM A$(4000):A$(1)=CHR$(0):A$(4000)
=CHR$(0):A$(2)=A$
100 GRAPHICS 0:POKE 752,1:? :? "  GET-
IT-RIGHT II CREATOR PROGRAM"
110 ? :? "  Copyright (C)  ATARI USER,
 1987"
120 ? :? :? "      Written by Andre Wi
lley"
130 ? :? :? :? :? "  CREATE CASSETTE (
C) OR DISC (D)? ";
140 POKE 764,255:ADD=ADR(A$)
150 IF PEEK(764)=58 THEN 200:REM DISC
160 IF PEEK(764)=18 THEN 300:REM CASS
170 GOTO 150
200 REM DISC
210 ? CHR$(156);"    READING DATA -- P
LEASE WAIT";
220 REST=500:GOSUB 400
230 REST=1000:GOSUB 400
240 REST=700:GOSUB 400
250 SIZE=ADD-ADR(A$)
260 GOTO 3020
300 REM CASSETTE
310 ? CHR$(156);"    READING DATA -- P
LEASE WAIT";
320 REST=600:GOSUB 400
330 REST=1000:GOSUB 400
340 REST=800:GOSUB 400
350 SIZE=PEEK(ADR(A$)+1)*128
360 GOTO 3000
400 REM READ DATA INTO MEMORY
410 CHK=0:MULT=1:RESTORE REST:POKE 764
,255
420 READ A:IF A=-1 THEN 450
430 POKE ADD,A:ADD=ADD+1:CHK=CHK+(A*MU
LT):MULT=MULT+1:IF MULT>8 THEN MULT=1
440 GOTO 420
450 READ A:IF A=CHK THEN RETURN
460 ? :? :? :? "DATA ERROR SOMEWHERE A
FTER LINE ";REST:? :? "*** PLEASE CHEC
K EACH DATA LINE ***":? :END
500 REM DISC HEADER
510 DATA 255,255,0,48,205,52,-1,2294
600 REM CASSETTE HEADER
610 DATA 0,10,250,47,205,52,-1,2295
700 REM DISC FOOTER
710 DATA 76,52,50,255,255,224,2,225,2,
0,48,-1,5929
```



```
800 REM CASSETTE FOOTER
810 DATA 165,12,133,2,165,13,133,3,160
,2,169,234,145,2,136,16,251,24,96,-1,6
465
990 REM MAIN PROGRAM DATA
1000 DATA 76,61,52,27,48,75,48,81,48,8
4,48,75,48,75,48,76,76,48,0
1010 DATA 0,0,0,0,0,0,0,0,0,169,0,141,
18,48,141,21,48,160,2,177,36,201,58,20
8,3
1020 DATA 200,177,36,201,155,240,20,20
1,83,240,16,201,69,240,12,201,80,208,5
,141,25,48,240,8,160
1030 DATA 139,96,169,83,141,25,48,160,
1,96,160,137,96,160,146,96,172,21,48,1
92,255,240,243,153,116
1040 DATA 50,201,155,240,35,238,21,48,
208,228,168,162,0,173,25,48,201,80,240
,10,173,7,228,72,173
1050 DATA 6,228,72,152,96,173,55,228,7
2,173,54,228,72,152,96,160,0,140,21,48
,140,19,48,140,20
1060 DATA 48,140,24,48,140,22,48,140,2
3,48,240,106,160,255,200,185,116,50,20
1,155,240,4,201,32,208
1070 DATA 244,192,5,176,14,140,26,48,1
69,32,32,104,48,172,26,48,200,208,238,
160,0,140,26,48,185
1080 DATA 116,50,201,32,240,13,201,155
,240,9,32,104,48,172,26,48,200,208,233
,169,32,32,104,48,173
1090 DATA 20,48,41,124,74,74,168,185,1
7,50,32,104,48,173,20,48,41,3,10,10,10
,141,26,48,173
1100 DATA 19,48,41,224,74,74,74,74,74,
13,26,48,168,185,17,50,208,9,185,116,5
0,201,155,240,143
1110 DATA 208,63,32,104,48,173,19,48,4
1,31,168,185,17,50,32,104,48,169,32,32
,104,48,169,40,32
1120 DATA 104,48,173,18,48,41,31,168,1
85,17,50,32,104,48,169,41,32,104,48,16
9,155,32,104,48,152
1130 DATA 72,169,0,168,153,116,50,200,
208,250,104,168,96,240,184,152,72,136,
136,136,185,116,50,201,58
1140 DATA 240,4,201,32,208,28,162,3,20
0,185,116,50,221,9,50,208,17,202,208,2
44,104,168,173,23,48
1150 DATA 208,82,173,22,48,208,77,240,
145,104,168,185,116,50,201,34,208,17,1
73,22,48,208,61,173,23
1160 DATA 48,73,1,41,1,141,23,48,208,4
9,152,72,136,136,136,136,185,116,50,20
1,58,240,4,201,32
1170 DATA 208,30,162,4,200,185,116,50,
221,12,50,208,19,202,208,244,173,23,48
,208,11,169,1,141,22
1180 DATA 48,208,4,169,0,240,137,104,1
68,169,0,141,27,48,185,116,50,141,26,4
8,174,24,48,240,9
1190 DATA 14,26,48,46,27,48,202,208,24
7,173,18,48,77,27,48,77,26,48,141,18,4
8,173,19,48,24
1200 DATA 109,26,48,141,19,48,173,20,4
```

Turn to Page 26 ▶

◀ From Page 25

```
8,109,27,48,141,20,48,200,206,24,48,16
,188,169,7,141,24
1210 DATA 48,208,181,77,69,82,65,84,65
,68,79,49,50,51,52,53,54,55,56,57,65,6
7,68,69,70
1220 DATA 71,72,74,75,76,77,78,80,81,8
2,83,84,85,86,87,88,89,32,52,18,160,0,
185,26,3
1230 DATA 240,40,201,71,240,7,200,200,
200,192,33,208,240,169,0,141,231,2,133
,14,133,128,169,0,141
1240 DATA 232,2,133,15,133,129,162,9,1
69,0,157,18,48,202,16,250,96,169,3,153
,27,3,169,48,153
1250 DATA 28,3,169,71,153,26,3,208,210
,189,43,6,48,4,200,142,1,3,202,16,244,
192,1,208,8
1260 DATA 173,1,3,24,105,49,208,88,32,
61,42,125,155,155,155,155,80,82,79,71,
82,65,77,77,73
1270 DATA 78,71,32,79,80,84,73,79,78,8
3,32,68,82,73,86,69,32,83,69,76,69,67,
84,160,79
1280 DATA 78,155,0,32,105,44,32,61,42,
155,155,80,82,69,83,83,32,72,65,80,80,
89,32,68,82
1290 DATA 73,86,69,32,35,32,84,79,32,8
0,82,79,71,82,65,77,32,0,32,179,42,141
,201,53,141
1300 DATA 8,54,141,27,51,56,233,49,170
,48,238,224,4,176,234,189,43,6,48,229,
232,142,1,3,32
1310 DATA 61,42,125,155,155,155,83,69,
76,69,67,84,73,79,78,32,77,69,78,85,32
,70,79,82,32
1320 DATA 68,50,155,155,127,48,41,32,7
8,79,84,72,73,78,71,155,127,49,41,32,8
3,69,84,32,85
1330 DATA 78,72,65,80,80,89,32,77,79,6
8,69,155,127,50,41,32,73,78,73,84,32,6
8,82,73,86
1340 DATA 69,155,127,51,41,32,67,72,65
,78,71,69,32,68,82,73,86,69,32,35,155,
127,52,41,32
1350 DATA 83,69,84,32,78,69,87,32,79,7
0,70,32,68,69,76,16,48,93,48,160,48,19
4,48,84,49
1360 DATA 98,49,125,49,155,49,169,49,2
03,49,7,49,68,49,227,48,2,49,25,49,47,
49,180,48,205
1370 DATA 48,216,48,230,48,16,49,28,49
,38,49,50,49,55,49,60,49,33,49,101,49,
172,49,31,48
1380 DATA 140,48,143,48,219,48,233,48,
244,48,19,49,41,49,223,49,232,49,235,4
9,242,49,245,49,251
1390 DATA 49,34,48,86,48,100,48,137,48
,149,48,116,49,132,49,187,49,152,48,11
1,49,137,49,144,49
1400 DATA 180,49,146,48,209,49,255,49,
6,50,64,48,74,48,108,48,175,48,183,48,
191,48,208,48,241
1410 DATA 48,254,48,206,49,214,49,229,
49,239,49,200,49,217,49,226,49,248,49,
93,50,3,48,5,48
1420 DATA 7,48,9,48,11,48,13,48,0,0,15
5,199,197,212,173,201,212,173,210,201,
199,200,212,173,201
1430 DATA 201,32,45,32,76,111,97,100,1
01,100,32,79,75,155,155,0,169,60,141,2
,211,160,0,152,72
1440 DATA 185,30,52,240,8,32,104,48,10
4,168,200,208,241,104,165,12,141,50,50
,165,13,141,51,50,173
1450 DATA 231,2,133,208,141,100,50,24,
105,114,141,71,50,173,232,2,133,209,14
1,105,50,105,3,141,80
1460 DATA 50,56,169,3,229,208,133,203,
169,48,229,209,133,204,56,169,49,229,2
03,133,12,169,50,229,204
1470 DATA 133,13,162,0,160,0,189,116,5
1,133,205,189,117,51,240,20,133,206,56
,177,205,229,203,145,205
1480 DATA 200,177,205,229,204,145,205,
232,232,208,224,162,4,160,0,185,3,48,1
45,208,200,208,248,238,187
1490 DATA 52,230,209,202,208,238,230,2
02,-1,541181
3000 REM SAVE TO CASSETTE
3010 POKE 764,255:? CHR$(156);"PRESS R
ECORD AND PLAY AND HIT RETURN";:OPEN #
1,8,128,"C:":GOTO 3040
3020 REM SAVE TO DISC
3030 OPEN #1,8,0,"D:AUTORUN.SYS"
3040 ? CHR$(156);"     SAVING DATA - P
LEASE WAIT";
3100 POKE 850,11
3110 BUFHI=INT(ADR(A$)/256):POKE 853,B
UFHI
3120 BUFLO=ADR(A$)-(BUFHI*256):POKE 85
2,BUFLO
3130 LENHI=INT(SIZE/256):POKE 857,LENH
I
3140 LENLO=SIZE-(LENHI*256):POKE 856,L
ENLO
3150 RESTORE 3160:FOR I=0 TO 5:READ A:
POKE 1536+I,A:NEXT I
3160 DATA 104,162,16,76,86,228
3170 Z=USR(1536)
3200 CLOSE #1:POKE 752,0
3210 ? CHR$(156);"          FILE COMP
LETE":? :? :? :? "DON'T FORGET TO LOAD
 IT EACH SESSION":?
3220 END
```

GIR using the program from the August 1986 issue of Atari User

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1	4441	2	871	3	5801
4	6213	5	5893	6	4579
7	871	8	4441	9	871
50	8118	100	11586	110	7576
120	8616	130	22219	140	4371
150	5930	160	5960	170	1623
200	1602	210	8338	220	3568
230	3802	240	3572	250	3064
260	1860	300	2453	310	8338
320	3570	330	3802	340	3574
350	4532	360	1852	400	4806
410	7800	420	4320	430	14144
440	1620	450	5673	460	17930
500	2866	510	4995	600	4030
610	4777	700	2990	710	7056
800	4106	810	11408	990	4070
1000	9373	1010	11107	1020	13619
1030	14147	1040	13732	1050	13357
1060	13952	1070	13601	1080	13779
1090	12812	1100	13462	1110	13307
1120	13590	1130	14420	1140	13674
1150	14112	1160	13291	1170	13630
1180	13395	1190	13047	1200	13480
1210	12492	1220	12316	1230	13650
1240	13165	1250	12369	1260	13045
1270	12401	1280	12465	1290	12497
1300	12946	1310	12864	1320	13020
1330	12398	1340	12693	1350	12448
1360	13033	1370	12753	1380	13764
1390	13776	1400	13549	1410	13117
1420	13625	1430	13255	1440	13757
1450	13751	1460	14474	1470	14231
1480	14658	1490	6909	3000	3990
3010	30690	3020	2970	3030	5165
3040	7911	3100	1936	3110	6974
3120	7701	3130	7010	3140	7231
3150	9934	3160	3999	3170	2062
3200	3475	3210	15756	3220	836

GIR using new program

Get it right! II

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1	CAJ (W)	460	GQK (A)	1280	51M (O)
2	CAK (3)	500	CUW (O)	1290	68F (N)
3	CAL (V)	510	UYV (8)	1300	DCT (2)
4	CAM (4)	600	CUX (1)	1310	8QE (X)
5	CAN (W)	610	TSP (8)	1320	7KR (E)
6	CAP (7)	700	CUY (O)	1330	8LX (7)
7	CAQ (V)	710	JOR (L)	1340	6DA (6)
8	CAR (8)	800	CVO (M)	1350	7S1 (S)
9	CAS (W)	810	TD7 (F)	1360	9E2 (R)
50	K7F (3)	990	EO1 (D)	1370	96Q (R)
100	TJD (5)	1000	220 (C)	1380	LK6 (F)
110	RMY (2)	1010	MSW (9)	1390	MP8 (R)
120	4F5 (C)	1020	H1Y (F)	1400	L2L (P)
130	87K (R)	1030	SF9 (H)	1410	HQT (N)
140	P8U (N)	1040	HXX (9)	1420	K6U (E)
150	PW9 (M)	1050	HK9 (4)	1430	HXD (2)
160	PN9 (P)	1060	QRD (Q)	1440	JUW (D)
170	R37 (6)	1070	HAW (F)	1450	G96 (H)
200	CUT (C)	1080	HW3 (6)	1460	W91 (G)
210	LK4 (1)	1090	961 (G)	1470	VFS (P)
220	6ST (Y)	1100	HEK (M)	1480	UWF (M)
230	A88 (7)	1110	HYR (H)	1490	FDD (8)
240	79T (U)	1120	JFR (R)	3000	CXQ (D)
250	8WE (A)	1130	UXH (7)	3010	PO5 (C)
260	RQ8 (T)	1140	KGK (M)	3020	D2Q (G)
300	CUU (P)	1150	Q4U (P)	3030	NDY (V)
310	LK5 (W)	1160	HK4 (T)	3040	WVM (T)
320	6WU (3)	1170	GQV (X)	3100	PUH (9)
330	A89 (T)	1180	K2V (X)	3110	JXM (T)
340	7EU (O)	1190	G6Y (W)	3120	R1Q (6)
350	NYH (Y)	1200	HU1 (U)	3130	JXU (T)
360	RN9 (F)	1210	81O (C)	3140	PDR (F)
400	CUV (5)	1220	58A (K)	3150	H48 (6)
410	RRP (Q)	1230	JKG (J)	3160	FM2 (3)
420	KS7 (G)	1240	GQ2 (7)	3170	VL6 (U)
430	WE1 (U)	1250	6YK (X)	3200	7N5 (S)
440	QWA (D)	1260	EWW (5)	3210	D9S (6)
450	18J (6)	1270	7RM (G)	3220	DEU (Y)

SOFTWARE Solutions

Your programming problems solved by ANDRÉ WILLEY

I'VE had some fascinating letters this month – mostly from people with problems related to disc usage. Where have all the cassette users gone to – or don't you have any programming problems?

Anyway, let's kick off this time with a query from **Michael Mussulis** from Catford, who is running an 800XL with two US Doubler 1050 disc drives and a Panasonic printer. He writes:

"I am currently developing a relatively small program which deals with files and disc utilisation. I need to delete some information from a file which was saved earlier. For example:

```
10 DIM A$(20)
20 OPEN #1,8,0,"D:DATAFILE.DAT"
30 PRINT "ENTER DATA TO SAVE:";
:INPUT A$
40 IF A$="" THEN 70
50 PRINT #1;A$
60 GOTO 40
70 CLOSE #1
```

After typing RUN I can enter various words such as MICHAEL, HELLO or ATARI and they will be stored on the disc and the file closed.

Now, using:

OPEN #1,12,0,"D:DATAFILE.DAT"

for both reading and writing at the same time, how can I erase specific information – such as the word HELLO – from the file?

Also, could you tell me exactly how the NOTE and POINT commands are used for Random/Direct Access to files and sectors?"

Well, Michael, I'm not really all that surprised that you are having trouble with the NOTE and POINT disc access commands, as they are rather poorly documented in the manual. One would expect NOTE to return a useful value such as an offset into the current file (as does SpartaDos), but unfortunately – due to the limitations of the Dos 2.0/2.5 file structure – it can only return a sector/byte reference.

To try to calculate such values from scratch would be almost impossible, but luckily for you there is an easy way around the problem.

What you need to do, in effect, is to replace a single text string within your file with one containing blanks. This means that each time the string is read back with the INPUT #1 statement you will receive a *null string* – a string of zero length such as the one you searched for on line 40.

This will happen regardless of how many blanks there are because Atari Basic ignores any spaces following an entry – or in this case, ignores a complete entry composed entirely of spaces.

The solution could be a program along these lines:

```
10 DIM A$(20),REPLY$(3),SPACE$(20)
20 SPACE$="                    ":REM 20 SPACES
30 OPEN #1,12,0,"D:DATAFILE.DAT"
40 TRAP 500
50 NOTE #1,SECT,BYTE
60 INPUT #1,A$
70 PRINT "SHALL I DELETE ";A$;
80 INPUT REPLY$
90 IF REPLY$<>"YES" THEN 50
100 POINT #1,SECT,BYTE
110 PRINT #1;SPACE$(1,LEN(A$))
120 GOTO 50
500 CLOSE #1: END
```

Let's take a look at how this works. Lines 10 and 20 set up the strings, including one which is filled with the same number of spaces as your maximum file entry length (in this case 20).

Then line 30 opens the file in update mode and line 40 sets a TRAP to line 500 to detect the end of the file. Incidentally, this would be more elegant if you used what is known as a *wild entry* or *rogue* terminator.

Put simply, you finish every file by writing a nonsensical entry – such as four asterisks – which you can look out for when reading the entries back in. This will tell you when there's no more data in the file.

Line 50 is the first clever bit. The NOTE command will return the current file pointer is terms of the sector number and the byte within that sector. Don't worry about the exact details because the numbers will only be used by the POINT command if we decide that we want to return to the same point in the file.

Lines 60 to 90 read in the entry from the disc and ask you if you want to delete it. If your reply is NO it will go back to line 50, get the new NOTE values for the next entry and do the whole thing again.

If, on the other hand, you enter YES at the prompt then the program continues to line 100 which will POINT the disc file pointer back to the previously NOTEd position at the start of the unwanted entry.

Line 110 is probably the most complicated to understand, and it is this line which actually deletes the entry. As I have said, what we need to do is replace the current entry with blanks, but to do it character by character using the PUT command would take ages.

However, we already have the entry stored in memory as A$, so therefore we know how many character need replacing. In fact, all we need to do is print out the same number of spaces as there are characters in A$. To do this, we use SPACE$(1,LEN(A$)) – which means the portion of SPACE$ from the beginning of the string for the same number of characters as there are in A$.

Once this has been done we are back in position to read the next entry,

Turn to Page 28 ▶



◀ From Page 27

and the loop starts all over again at line 50.

This method has one small disadvantage – the entries are not actually deleted but rather overwritten. This means that the file will still take up the same amount of space on the disc even after you have deleted most of the entries.

To avoid this you could copy it, line-by-line, into a second file – missing out all the blank entries, of course. Simple when you know how, isn't it?

'Hidden' space on disc

D.A. Richardson of Walsall in the West Midlands has worked out the quickest way to get my attention...

❛ I read with great interest your articles on Dos and the operating system in relation to the formatting and sector allocation of a Dos disc – however I am very confused on a related point and hope you can help.

I do indeed use Dos 2.5 a lot, but I also occasionally choose to use SpartaDos 2.3b, particularly for economy of disc use.

The query I have is with the amount of storage space available to me on different discs. I usually use 48tpi discs, however I recently borrowed some 96tpi discs to determine whether there would be any advantage.

I formatted the 48tpi disc and tried to transfer a large number of files – to see how many it would take. After 47 files it gave me a "Disk Full" error roughly where I expected.

Then I did the same with the 96tpi disc which promptly displayed over 1000 available sectors – and after transferring the same datafiles still showed over 700 available sectors.

However, this disc now won't permit any other files to be transferred – once again displaying a "Disc Full" error.

Would you please be kind enough to explain why the directory shows available space which apparently cannot be used, and also what possible advantage it can be to use 96tpi discs when they don't appear to store any more information than 48tpi ones?❜

Your problem stems from a slight misunderstanding over the way that discs work. The number of tracks per inch (tpi) specified on the label of a disc refers to the rated capacity of that disc – meaning that the suppliers won't guarantee it beyond that point.

In fact, all 5.25 inch computer discs are manufactured in exactly the same way – it is only in quality control afterwards that grading occurs. The more data that can be squeezed safely on to a disc the higher its rating will be.

A standard, single density, 810 or 1050 drive will use 48tpi discs quite happily – and certainly won't complain about using the higher quality 96tpi variety. However, it is only when you work in true double density (such as with a US Doubler) that a 96tpi disc will show its worth. And even then, most good quality 48tpi discs will cope quite happily with double density usage.

However, these figures only refer to the theoretical capacity of the disc – how much you can actually place on it is up to you when you initially format it.

SpartaDos, as you know, is capable of accessing almost any type of disc drive, with many possible formats. It can handle either single sided or double sided drives, with either 35, 40, 77 or 80 tracks per disc.

Unfortunately, Atari 810 and 1050 drives are only capable of using one of those eight options – Single Sided, 40 track. To obtain any of the others would require the addition of a complex interface and a completely different drive mechanism.

Now prepare your brain for action – here come the numbers: The three densities available with an Atari drive are all variations within the 40 track/single sided option: Standard density gives 18 sectors a track, each being 128 bytes long (that is 720 sectors or 92,160 bytes).

Enhanced (1050) density gives 26 similar sectors a track (1040 sectors or 133,120 bytes). Double density is slightly different in that it works with double-sized sectors, although it only uses 18 per track (giving 720 sectors again, but since each is 256 bytes long, a total capacity of 184,320 bytes)

SpartaDos obviously has no way of knowing when you select a drive type whether your hardware can fully support it.

For example, should you choose 80 tracks, double sided, using double density (256 byte) sectors, SpartaDos will assume you have access to the correct hardware and decide you have 80 tracks of 18 sectors on both sides of the disc. That's 2,880 sectors – or 737,820 bytes – which is four times greater than the double density disc that the drive will actually create.

Now you see the problem – no wonder SpartaDos reckons there are more free sectors than there really are. In future, stick to 40 tracks, single sided and simply select Standard, Enhanced or Double Density modes.

As to what discs to use, 48tpi should be fine for most uses, but if you want to be doubly certain (no pun intended) use 96tpi for the higher densities.

● *Oh well, it looks like I've run out of space again. Don't forget to keep those letters coming. See you next month.*

Are you having problems getting your programs to work? Write to Software Solutions, Atari User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

We will answer as many as we can within the pages of *Atari User* but, unfortunately we cannot give personal replies.

Glad tidings for 16k adventurers

by Rouloc

I'M back again this month in one piece after my usual array of heroic deeds, saving maidens and slaying evil monsters and so on. There's plenty to chat about, so fetch your ale and pull a chair about the fire and listen very carefully.

A lot of fellow travellers still have 16k machines and feel rather left out of things as far as adventures are concerned. Well, old Ruoloc as usual is the bearer of glad tidings. A company called AD400 has produced some rather nice little adventures that will happily run in 16k of memory.

AD400 has made full use of the features of the Atari and, by the judicious use of machine-code routines tucked away in odd corners, produced adventures which go no little way to matching the standards of those for the larger memory machines.

The games will also run in the bigger memory Atari 8 bit computers.

In order to squeeze them into 16k, the games have only a small number of locations (rooms) but that deficency is made up by the fact that there are puzzles and problems at almost every step of the way.

The adventures are based on the exploits of Special Agent AD400. The two titles so far available are Escape Part 1 and Escape Part 2.

In Part 1, you are incarcerated in a foreign prison and must make good your escape.

In Part 2, having successfully escaped from the inner confines of the prison, you must complete your bid for freedom using objects acquired in Part 1. Part 2 cannot be played unless you have obtained a special password given on completion of Part 1.

Two further adventures, Island Incident and Egyptian Escapade, are likely to be ready by the time you read this.

The games cost £3.75 each for tape and £4.75 for disc.

Latest news from Infocom is that Plundered Hearts is its first venture into the world of romantic fiction. Grunt, my wall-eyed, seven-foot tall, heavyweight wrestler filing clerk has always got his raddled nose stuck into the latest Mills and Boon potboiler so should be well pleased. Breathless prose and true love conquers all are his meat and drink (next to body slams and Boston crabs).

The game's main character is a young lady who has set sail on the high seas in the schooner Lafond Deux.

As well as losing her heart to handsome pirate captain Nicholas Jamison, our heroine faces less controllable events such as ravenous crocodiles, barrier reefs and dangerous explosives.

The author, Amy Briggs, has used her research into romantic fiction, 17th century sailing vessels and the dress of that time to weave a vibrant tale of passion and adventure.

Grunt is all agog but since stories of sighing and swooning are not my favourite bedtime reading, I shall suspend judgement until I have played it. I hope to review it very soon.



Turn to Page 30 ▶

◄ From Page 29

Hints & tips

STATIONFALL

- *Have found an ostrich but need the ostrich nip?*

Look at the ceiling in the Pet store.

- *Can't get through the east or south connections?*

Have a look in the trash can in the printing plant.

- *Documents not validated?*

Peep under the bed in the Commander's office.

- *Village entry form too crumpled to be of use?*

Take it to the laundry room and iron it there.

THE PAWN

- *Dragon difficult to bypass?*

Draw his attention to something else by first looking at the shadows, then pointing at them and finally shining the white at them.

- *Snowman an obstacle?*

Melt him with the white.

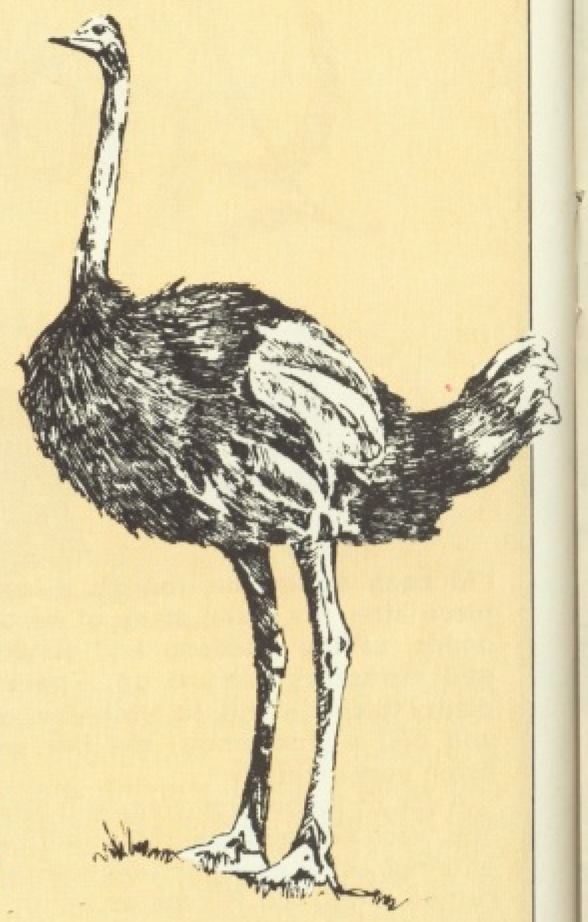
LEATHER GODDESSES OF PHOBOS

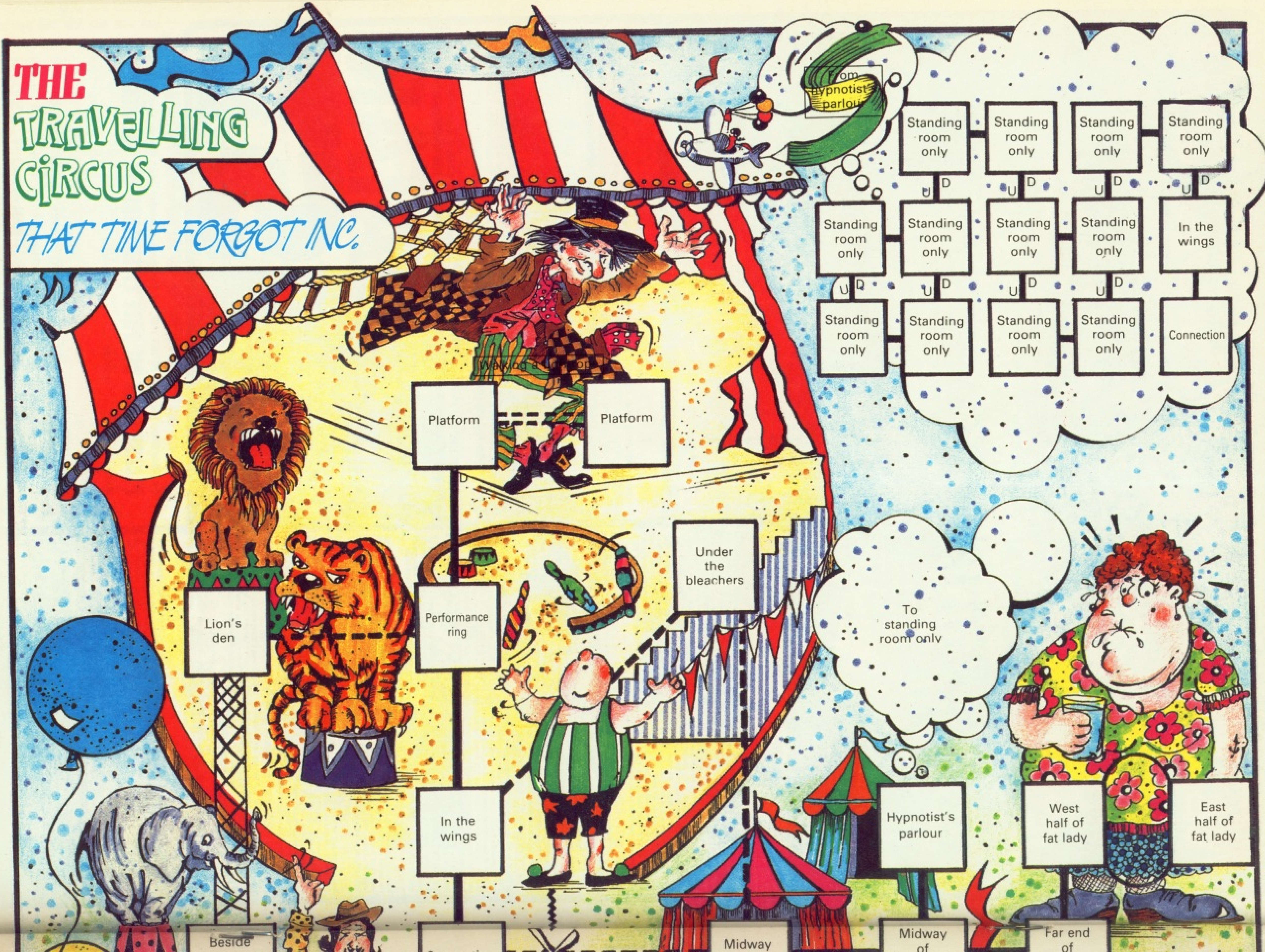
- *Can't get past the Ion beam on the canal?*

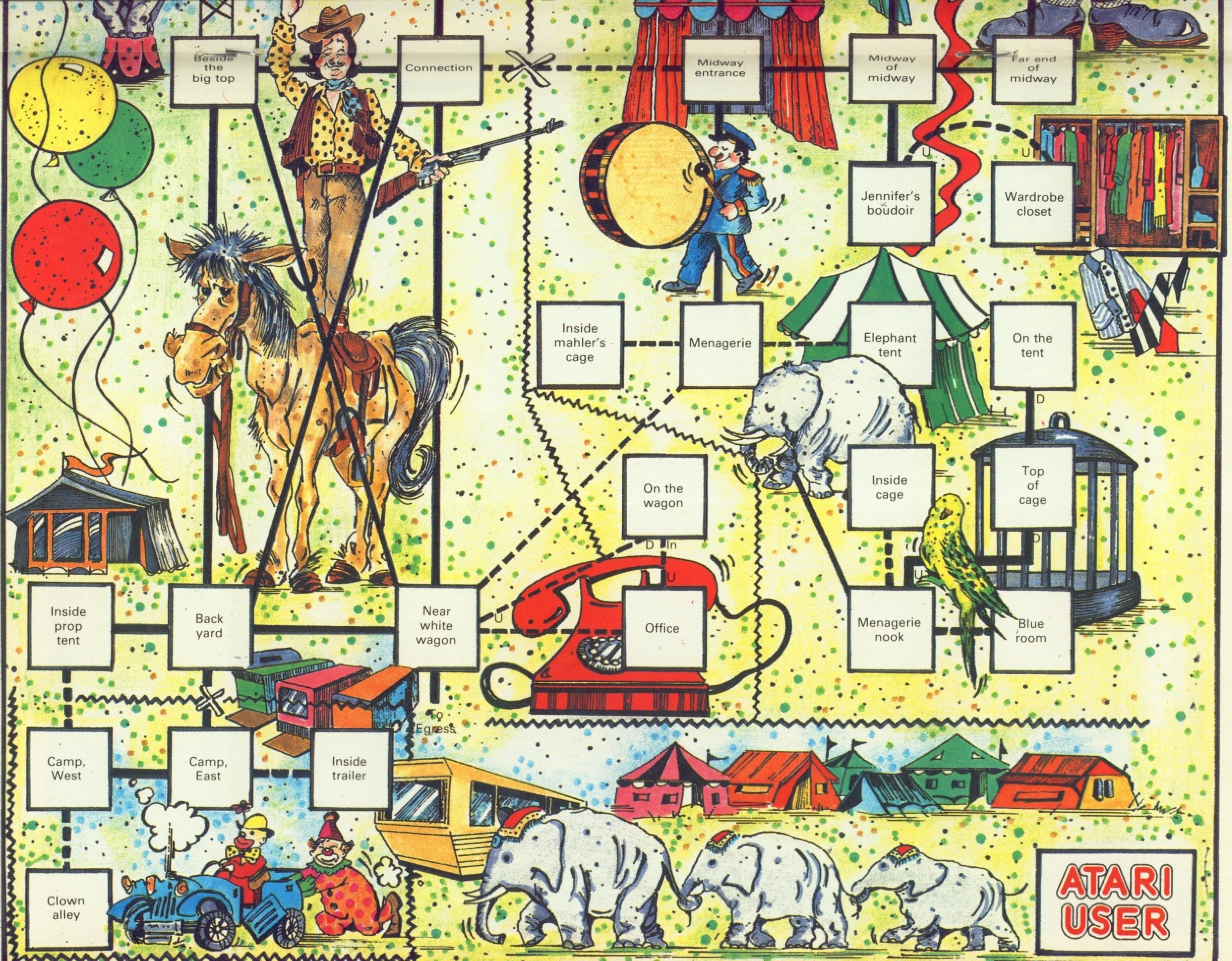
Send the barge ahead to the icy dock then transport to it when you think it has arrived by using the black circle down the well in the oriental gardens.

- *Want to kiss the frog but can't?*

Put the clothes pin on your nose, put the balm on your lips, cover your ears with your hands and close your eyes. Now kiss the frog!




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THAT TIME FORGOT INC.
From Hypnotist's parlour
Standing room only
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Standing room only
Standing room only
Standing room only
Standing room only
Standing room only
In the wings
Standing room only
Standing room only
Standing room only
Standing room only
Connection
Platform
Platform
Under the bleachers
Lion's den
Performance ring
To standing room only
In the wings
Hypnotist's parlour
West half of fat lady
East half of fat lady
Beside
Midway
Midway of
Far end of


Beside the big top
Connection
Midway entrance
Midway of midway
Far end of midway
Jennifer's boudoir
Wardrobe closet
Inside mahler's cage
Menagerie
Elephant tent
On the tent
Inside cage
Top of cage
On the wagon
Inside prop tent
Back yard
Near white wagon
Office
Menagerie nook
Blue room
To Egress
Camp, West
Camp, East
Inside trailer
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AT 11

GREEDY GUNTHER

By Ian Flockhart

GUNTHER's rich uncle, Scrooge, has just died leaving his vast fortune to be split between his nephews. But Gunther is not happy to have only a share – he wants it all. So making his way to his uncle's mansion he plans to grab all the money before it's all shared out.

Type the game in and use the Get it Right! checksums to ensure that you have made no errors. As you can see, from lines 3500 onwards the game screens are defined in a way that makes them very easy to change, so you can easily invent your own to add an extra challenge to the game.

You'll find details of the numeric data lines in the program breakdown, and Table I shows the keys needed to obtain the graphics characters. Run the program and control Gunther's direction of movement using joystick or keyboard.

Pound coins are scattered all over the floor, but the real money comes in gold bags, each containing 100 gold coins. Collect enough of these before the time runs out and you receive a bonus and move to the next screen.

Unfortunately, Uncle Scrooge was rather security concious and has left death traps lying around to catch burglars. You must also be careful to avoid Freddie the freak, a novel guard dog that Uncle scrooge acquired cheaply from his old friend Doctor Steinfranken. That being said, the object of the game is to collect as much money as possible – so stay alert and be greedy!



Character	How obtained	Represents
▟	Inverse+Control+C	Brick wall
▚	Inverse+Shift+!	Death trap
▝	Control+E	Coin

Table I: Characters in the DATA statements

CONTROLS

Joystick: Plugged in port 1 (fire to start game)

or:

Keyboard:
- Z Left
- X Right
- K Up
- M Down
- Space Start game

Program Breakdown.

200	Reads joystick or looks at keyboard, then moves Gunther
300	Moves Freddie
400	Prints bags of gold on screen
500	Sets collision detection flags and updates the score
600	Prints money, time and so on
700	Completed screen routine
800	Lost life routine
1000	Game over routine
1200 – 1530	Sound effects routines
1600	Bonus points routine
2000	Draws the title screen
2500	Sets up variables
2520	Redefines characters
3000 – 4495	Draws game screens. The individual lines of numeric data (3695, 3895, 4095, 4295 and 4495) following every 20 lines of screen data contain the values for XF, YF, XFM, YFM, NO, XG, YG, XGM and YGM respectively. The use of these variables can be found in the variable list.

Turn to Page 36 ▶

◀ From Page 35

Variables

SCREEN	Screen number
MONEY	Money collected
BAGS	Bags left to collect
TIME	Time remaining
LIVES	Lives remaining
SKILL	Skill level
BONUS	Bonus
HI	Highest amount collected so far
XG,YG	Gunther's position
XGM,YGM	Controls direction of Gunther (0 is stationary, 1 is forward, -1 is backward)
XF,YF	Freddie's position
XFM,YFM	Controls direction of Freddie
X,Y	Freddie's last position
X2,Y2	Gunthers last position
NO	Number of forward steps Freddie makes. He will always take two steps back past the starting position as he returns
CO	Used to keep track of Freddie's movement
SC	Screen character to replace Freddie
SCR	Temporary storage for SC
XB,YB	Position of gold bags
DEAD	Lost a life flag
B	Collected a bag flag
S,G	Used in the LOCATE command
START	Start the game flag

```
1 REM *****GREEDY GUNTHER*****
2 REM by Ian Flockhart
3 REM (c)ATARI USER
4 REM
10 GOSUB 2520:REM DEFINE CHARS
20 GOSUB 2500:REM GAME VARIABLES
30 GOSUB 2000:REM TITLE SCREEN
40 GOSUB 3000:REM GAME SCREEN
49 REM MAIN LOOP
50 GOSUB 200:REM JOYSTICK-MOVE GUNTHER
60 GOSUB 300:REM MOVE FREDDIE
80 GOSUB 600:REM ? SCORE,TIME etc..
90 IF DEAD=1 THEN GOSUB 800:REM LOST A
 LIFE
95 IF B=1 THEN GOSUB 1300
97 IF BAGS>0 AND B=1 THEN GOSUB 400:B=
0
100 IF BAGS=0 THEN GOSUB 700:REM COMP-
LETED SCREEN
110 TIME=TIME-1:SOUND 3,TIME+15,10,8:P
OKE 77,0:GOTO 50
199 REM JOYSTICK-MOVE GUNTHER
200 SOUND 3,0,0,0:S=STICK(0):P=PEEK(76
4):IF S=7 OR P=22 THEN XGM=1:YGM=0
210 IF S=11 OR P=23 THEN XGM=-1:YGM=0
220 IF S=14 OR P=5 THEN XGM=0:YGM=-1
230 IF S=13 OR P=37 THEN XGM=0:YGM=1
240 X2=XG:Y2=YG:XG=XG+XGM:YG=YG+YGM:GO
SUB 500
245 POSITION X2,Y2:? #6;CHR$(0):POSITI
ON XG,YG:? #6;CHR$(36)
250 RETURN
299 REM MOVE FREDDIE
300 SOUND 3,TIME+15,10,8:CO=CO+H:IF CO
=NO THEN XFM=-XFM:YFM=-YFM:H=-H
310 IF CO=0 THEN XFM=-XFM:YFM=-YFM:H=-
H
320 X=XF:Y=YF:SOUND 3,0,0,0
330 XF=XF+XFM:YF=YF+YFM:LOCATE XF,YF,S
CR:GOSUB 530
340 POSITION X,Y:? #6;CHR$(SC):POSITIO
N XF,YF:? #6;CHR$(166):SC=SCR
350 RETURN
399 REM ? BAGS OF GOLD
400 XB=INT(RND(0)*19):YB=INT(RND(0)*23
)
410 LOCATE XB,YB,S:IF S<>5 AND S<>0 TH
EN 400
420 POSITION XB,YB:? #6;CHR$(64)
430 RETURN
499 REM COLLISION ? -SET FLAGS
500 LOCATE XG,YG,G:IF G=5 THEN MONEY=M
ONEY+1
510 IF G=64 THEN MONEY=MONEY+100:BAGS=
BAGS-1:B=1
520 IF G=131 OR G=161 THEN DEAD=1:B=0
530 IF XG=XF AND YG=YF THEN DEAD=1:B=0
540 IF TIME=0 THEN DEAD=1:B=0
550 RETURN
599 REM ? SCORE
600 POSITION 0,20:? #6;"CASH-";MONEY:P
OSITION 12,20:? #6;"BAGS-";BAGS;"  "
610 POSITION 0,22:? #6;"TIME-";TIME;"
":POSITION 12,22:? #6;"LIVES-";LIVES
630 RETURN
699 REM COMPLETED SCREEN
700 GOSUB 1400:SCREEN=SCREEN+1:B=0
710 FOR I=0 TO 19:POSITION 0,I:? #6;"
                    ":NEXT I:GOSUB 1600
712 IF SCREEN>5 THEN SCREEN=1:SKILL=SK
ILL+1
715 POSITION 5,6:? #6;"SCrEEN ";SCREEN
;"    "
730 FOR D=1 TO 500:NEXT D
740 DEAD=0:BAGS=SKILL+3:TIME=125+SKILL
*20:GOSUB 3000:RETURN
799 REM LOST A LIFE
800 GOSUB 1200:REM DEAD SOUND
810 LIVES=LIVES-1:IF LIVES=0 THEN GOSU
B 1000:GOSUB 1100:GOSUB 2000:GOSUB 300
0:RETURN
820 GOSUB 730:RETURN
900 SETCOLOR 0,0,10:SETCOLOR 1,12,8:SE
TCOLOR 2,9,4:SETCOLOR 3,3,6
910 RETURN
999 REM GAME OVER
1000 POSITION 0,4:? #6;"
    "
1010 POSITION 0,5:? #6;"     GAmE OVeR
    "
1020 POSITION 0,6:? #6;"
    "
1025 GOSUB 1500
1030 RETURN
1100 FOR I=0 TO 23:POSITION 0,I:? #6;"
                    ";:NEXT I
1110 RETURN
1199 REM DEAD SOUND
1200 SOUND 0,100,2,15:FOR J=1 TO 100:N
EXT J:SOUND 0,0,0,0
1210 RETURN
1299 REM PICK UP BAG SOUND
1300 FOR J=1 TO 5:SOUND 0,30-(J*3),10,
10:FOR D=1 TO 10:NEXT D:SOUND 0,40-(J*
3),10,10:NEXT J:SOUND 0,0,0,0
1310 RETURN
1399 REM END OF SCREEN SOUND
1400 FOR I=250 TO 10 STEP -2:SOUND 0,I
,10,10:NEXT I:SOUND 0,0,0,0
1410 RETURN
1499 REM END OF GAME SOUND
1500 FOR I=1 TO 3
1510 FOR J=1 TO 180 STEP 5:SOUND 0,255
,10,14-(J/13):NEXT J:FOR D=1 TO 60:NEX
T D
1520 NEXT I:FOR D=1 TO 100:NEXT D
1530 RETURN
1599 REM BONUS
1600 BONUS=500+(SKILL*500):MONEY=MONEY
+BONUS
1610 POSITION 5,6:? #6;"BOnUS ";BONUS
1620 FOR J=1 TO 15:SOUND 0,61,10,10:FO
R D=1 TO 10:NEXT D:SOUND 0,70,10,10:NE
XT J
1630 SOUND 0,0,0,0:FOR D=1 TO 200:NEXT
 D:RETURN
1999 REM TITLE SCREEN
2000 GOSUB 900:IF MONEY>HI THEN HI=MON
EY
2010 DL=PEEK(560)+PEEK(561)*256
2020 POKE DL+7,7+32:POKE DL+8,7+32:POK
E DL+15,2:POKE DL+16,2:POKE DL+19,2:PO
KE DL+20,2
```

Turn to Page 37 ▶

```
2030 POSITION 2,3:? #6;"GReEDY gUNThER
"
2035 POSITION 0,6:? #6;"LAST-";MONEY:P
OSITION 11,6:? #6;"HI-";HI
2040 POSITION 2,9:? #6;"$          ┐
&"
2050 POSITION 2,15:? #6;"@          @
#"
2060 POSITION 0,10:? #6;"  GREEDY
   COIN         FREDDIE THE"
2070 POSITION 19,11:? #6;"   GUNTHER
                 FREAK"
2080 POSITION 0,16:? #6;"  DEATH
   GOLD          BRICK"
2090 POSITION 19,17:? #6;"   TRAP
    BAG          WALL"
2100 POSITION 3,22:? #6;"by i flockhar
t"
2110 K=56:POKE 764,255:FOR J=1 TO 14:P
OKE 54277,J:SOUND 0,K,10,8:K=K-2:FOR D
=1 TO 20:NEXT D:GOSUB 2150
2115 IF START=1 THEN START=0:GOSUB 216
0:GOSUB 2500:RETURN
2117 NEXT J
2120 FOR J=14 TO 1 STEP -1:POKE 54277,
J:SOUND 0,K,10,8:K=K+2:FOR D=1 TO 20:N
EXT D:GOSUB 2150
2125 IF START=1 THEN START=0:GOSUB 216
0:GOSUB 2500:RETURN
2130 NEXT J
2140 POKE 77,0:GOTO 2110
2150 IF STRIG(0)=0 OR PEEK(764)=33 THE
N SOUND 0,0,0,0:START=1
2155 RETURN
2160 ? #6;"K"
2170 POKE DL+7,6:POKE DL+8,6:POKE DL+1
5,6:POKE DL+16,6:POKE DL+19,6:POKE DL+
20,6
2180 RETURN
2499 REM GAME VARIABLES
2500 MONEY=0:LIVES=3:TIME=125:BAGS=3:S
CREEN=1:DEAD=0:SKILL=0
2510 RETURN
2519 REM DIM STRING AND DEFINE CHARS
2520 GRAPHICS 1+16:CH=(PEEK(106)-8)*25
6:CHORG=(PEEK(756)*256):FOR I=0 TO 511
:POKE CH+I,PEEK(CHORG+I):NEXT I
2525 DIM A$(20):RESTORE 2610
2530 FOR J=0 TO 7:READ D:POKE CH+(ASC(
"@")-32)*8+J,D:NEXT J
2540 FOR J=0 TO 7:READ D:POKE CH+(ASC(
"$")-32)*8+J,D:NEXT J
2550 FOR J=0 TO 7:READ D:POKE CH+(ASC(
"&")-32)*8+J,D:NEXT J
2560 FOR J=0 TO 7:READ D:POKE CH+(ASC(
"#")-32)*8+J,D:NEXT J
2570 FOR J=0 TO 7:READ D:POKE CH+(ASC(
"%")-32)*8+J,D:NEXT J
2580 FOR J=0 TO 7:READ D:POKE CH+(ASC(
"!")-32)*8+J,D:NEXT J
2590 POKE 756,CH/256:POKE 752,1
2600 RETURN
2610 DATA 0,126,60,24,126,255,255,126
2620 DATA 60,102,195,165,129,219,66,12
6
2630 DATA 102,90,126,24,60,102,66,66
2640 DATA 238,238,0,187,187,187,0,238
2650 DATA 0,0,0,24,24,0,0,0
2660 DATA 195,231,126,60,60,126,231,19
5
2999 REM GAME SCREEN
3000 LINE=(SCREEN*200)+3300:RESTORE LI
NE
3010 FOR I=0 TO 19:READ A$:POSITION 0,
I:? #6;A$:NEXT I:READ XF,YF,XFM,YFM,NO
:CO=1:H=1:READ XG,YG,XGM,YGM
3020 POSITION XG,YG:? #6;CHR$(36):LOCA
TE XF,YF,SC:POSITION XF,YF:? #6;CHR$(1
65):POKE 764,255
3030 GOSUB 400:RETURN
```



```
3499 REM SCREEN DATA
3500 DATA ƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸ
3510 DATA ƸhℸℸℸℸℸℸℸℸƸhℸℸℸℸℸℸℸᒧ
3520 DATA ƸhℸℸℸℸBhℸℸƸhℸBhℸℸℸℸᒧ
3530 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
3540 DATA ƸhℸℸBhℸℸℸℸƸhℸℸℸℸBhℸℸᒧ
3550 DATA ƸhℸBhℸℸℸℸℸƸhℸℸℸℸℸBhℸᒧ
3560 DATA ƸhBhℸℸℸℸℸℸℸℸℸℸℸℸℸℸBhᒧ
3570 DATA Ƹhℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸᒧ
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3670 DATA ƸhℸℸℸℸBhℸƸhℸBhℸℸℸℸᒧ
3680 DATA ƸhℸℸℸℸℸℸℸℸƸhℸℸℸℸℸℸℸℸᒧ
3690 DATA ƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸ
3695 DATA 10,8,0,1,7,9,12,0,-1
3700 DATA ƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸ
3710 DATA ƸhℸℸℸℸℸƸhℸℸℸℸℸℸℸℸℸℸᒧ
3720 DATA ƸhℸℸℸℸℸƸhℸℸℸƸhℸℸℸℸᒧ
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3850 DATA ƸhℸℸBhℸℸℸℸƸhℸℸBhℸℸᒧ
3860 DATA ƸhℸℸℸBhℸℸℸƸhℸBhℸℸℸᒧ
3870 DATA ƸhℸℸℸℸBhℸℸƸhℸℸℸℸℸℸᒧ
3880 DATA ƸhℸℸℸℸℸℸℸℸƸhℸℸℸℸℸℸᒧ
3890 DATA ƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸ
3895 DATA 9,12,1,-1,5,5,12,0,-1
3900 DATA ƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸ
3910 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
3920 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
3930 DATA Ƹh▣hBhℸℸƸhℸℸBh▣hᒧ
3940 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
3950 DATA Ƹh▣hBhℸℸƸhℸℸBh▣hᒧ
3960 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
3970 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
3980 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
3990 DATA Ƹhℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸᒧ
4000 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
4010 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
4020 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
4030 DATA Ƹh▣hBhℸℸƸhℸℸBh▣hᒧ
4040 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
4050 DATA Ƹh▣hBhℸℸƸhℸℸBh▣hᒧ
4060 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
4070 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
4080 DATA ƸhℸℸℸBhℸℸƸhℸℸBhℸℸℸᒧ
4090 DATA ƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸ
4095 DATA 3,9,1,0,17,4,17,0,-1
4100 DATA ƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸ
4110 DATA Ƹhℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸᒧ
4120 DATA Ƹhℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸᒧ
4130 DATA Ƹhℸℸℸℸ▣hℸℸℸℸℸℸℸℸℸℸℸᒧ
4140 DATA Ƹhℸℸℸℸℸ▣hℸℸℸℸℸℸℸℸℸℸᒧ
4150 DATA Ƹhℸℸℸℸℸℸ▣hℸℸℸℸℸℸℸℸℸᒧ
4160 DATA Ƹhℸℸℸℸℸℸℸ▣hℸℸℸℸℸℸℸℸᒧ
4170 DATA ƸhℸℸℸℸƸƸƸƸƸƸƸƸƸƸƸƸƸƸ
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4190 DATA Ƹhℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸᒧ
4200 DATA ƸƸƸƸƸƸƸƸƸƸƸƸƸhℸℸℸℸᒧ
4210 DATA ƸƸƸƸƸƸƸƸƸƸƸƸƸhℸℸℸℸᒧ
4220 DATA Ƹhℸℸℸℸℸℸℸ▣hℸℸℸℸℸℸℸℸᒧ
4230 DATA Ƹhℸℸℸℸℸℸℸℸ▣hℸℸℸℸℸℸℸᒧ
4240 DATA Ƹhℸℸℸℸℸℸℸℸℸ▣hℸℸℸℸℸℸᒧ
4250 DATA Ƹhℸℸℸℸℸℸℸℸℸℸ▣hℸℸℸℸℸᒧ
4260 DATA Ƹhℸℸℸℸℸℸ▣hℸℸℸℸℸℸℸℸℸᒧ
4270 DATA Ƹhℸℸℸℸℸℸℸ▣hℸℸℸℸℸℸℸℸᒧ
4280 DATA Ƹhℸℸℸℸℸℸℸℸ▣hℸℸℸℸℸℸℸᒧ
4290 DATA ƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸ
4295 DATA 3,9,1,0,17,17,18,0,-1
4300 DATA ƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸ
4310 DATA ƸhℸℸℸℸℸℸℸBhBhℸℸℸℸℸℸᒧ
4320 DATA Ƹhℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸᒧ
4330 DATA ƸhℸℸℸℸℸℸℸBhBhℸℸℸℸℸℸᒧ
4340 DATA ƸhℸℸℸℸℸℸℸBhBhℸℸℸℸℸℸᒧ
4350 DATA ƸƸƸƸƸƸƸƸƸhƸƸƸƸƸƸƸƸ
4360 DATA ƸhℸℸℸℸℸℸℸBhBhℸℸℸℸℸℸᒧ
4370 DATA ƸhℸℸℸℸℸℸℸBhBhℸℸℸℸℸℸᒧ
4380 DATA ƸhℸℸℸℸℸℸℸBhBhℸℸℸℸℸℸᒧ
4390 DATA Ƹhℸℸ▣hℸℸℸℸℸℸℸℸℸ▣hℸᒧ
4400 DATA Ƹhℸℸ▣hℸℸBhBhℸℸ▣hℸᒧ
4410 DATA ƸhℸℸℸℸℸℸℸBhBhℸℸℸℸℸℸᒧ
4420 DATA ƸhℸℸℸℸℸℸℸBhBhℸℸℸℸℸℸᒧ
4430 DATA ƸhℸℸℸℸℸℸℸBhBhℸℸℸℸℸℸᒧ
4440 DATA ƸƸƸƸƸhƸƸhƸƸhƸƸƸƸ
4450 DATA ƸhℸℸℸℸℸℸℸBhBhℸℸℸℸℸℸᒧ
4460 DATA Ƹhℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸℸᒧ
4470 DATA ƸhℸℸℸℸℸℸℸBhBhℸℸℸℸℸℸᒧ
4480 DATA ƸhℸℸℸℸℸℸℸBhBhℸℸℸℸℸℸᒧ
4490 DATA ƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸƸ
4495 DATA 10,3,0,1,17,14,18,0,-1
```

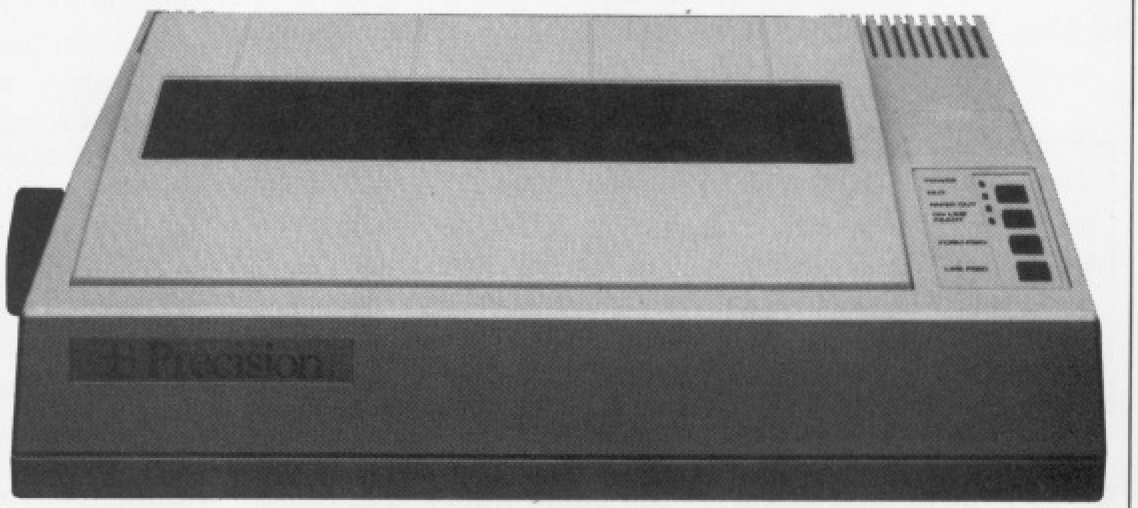
Turn to Page 38 ▶

◄ From Page 37

Get it right! II

1 CAJ (W)	320 SG8 (J)	800 PJ9 (M)	1600 2MC (G)	2180 VXL (2)	3510 2KX (A)	3780 P6X (O)	4050 MXL (K)	4310 2HY (A)
2 CAK (3)	330 98C (Q)	810 6AT (L)	1610 AUH (E)	2499 E9P (6)	3520 33K (D)	3790 KXR (3)	4060 2QL (H)	4320 VGY (W)
3 CAL (V)	340 4N7 (V)	820 A1F (T)	1620 N38 (Y)	2500 OPA (M)	3530 35K (A)	3800 LQR (O)	4070 2SL (K)	4330 2MY (U)
4 CAM (4)	350 RT7 (M)	900 WX6 (X)	1630 S9O (8)	2510 WOL (H)	3540 PVF (O)	3810 W1X (N)	4080 2UL (L)	4340 2PY (V)
10 SEL (J)	399 EJU (X)	910 RAE (X)	1999 EWN (9)	2519 DWP (P)	3550 ESX (6)	3820 XAX (5)	4090 173 (Y)	4350 YD3 (T)
20 SCM (7)	400 79T (V)	999 EK1 (X)	2000 8SY (O)	2520 4PD (W)	3560 49X (A)	3830 O4F (D)	4095 EJX (F)	4360 2TY (W)
30 S1N (J)	410 LNP (U)	1000 4GR (M)	2010 PPW (5)	2525 R3O (O)	3570 W1X (R)	3840 C5F (8)	4100 OS3 (O)	4370 2VY (T)
40 S5P (O)	420 XEK (7)	1010 J5M (U)	2020 U6S (Q)	2530 JJC (D)	3580 W3X (9)	3850 MCX (O)	4110 V5Y (P)	4380 2XY (X)
49 DT4 (X)	430 RK8 (C)	1020 4LT (L)	2030 PVT (F)	2540 JJL (9)	3590 2TT (M)	3860 OS2 (5)	4120 V7Y (O)	4390 U37 (C)
50 S6S (U)	499 EJV (6)	1025 SLH (U)	2035 2VC (W)	2550 JLQ (8)	3600 2DT (A)	3870 OJA (9)	4130 GXU (O)	4400 OR7 (F)
60 SAT (W)	500 V26 (S)	1030 VHK (X)	2040 WNH (X)	2560 JNJ (3)	3610 VSX (R)	3880 OFF (2)	4140 SLY (D)	4410 2MY (C)
80 SPV (Q)	510 O76 (O)	1100 87C (V)	2050 EGX (S)	2570 JQN (4)	3620 VUX (A)	3890 272 (E)	4150 C1Y (6)	4420 2PY (F)
90 NHD (V)	520 4KG (W)	1110 VHK (S)	2060 54W (O)	2580 JSE (8)	3630 47X (6)	3895 GGQ (A)	4160 3SY (G)	4430 2RY (C)
95 E7E (J)	530 FQ5 (C)	1199 DWN (V)	2070 326 (Y)	2590 GTG (E)	3640 EUX (1)	3900 1S2 (7)	4170 SKY (U)	4440 Y67 (F)
97 776 (U)	540 UVX (Q)	1200 NM3 (9)	2080 6V8 (2)	2600 W2L (8)	3650 Q2F (A)	3910 3JK (7)	4180 SMY (D)	4450 2VY (A)
100 U2Y (2)	550 RT9 (S)	1210 VMK (E)	2090 V68 (E)	2610 SAT (E)	3660 3GK (D)	3920 3LK (7)	4190 VNY (R)	4460 VUY (Y)
110 EGH (3)	599 EJW (N)	1299 E1N (9)	2100 W9X (F)	2620 W9Q (D)	3670 3JK (A)	3930 NXK (N)	4200 385 (C)	4470 3OY (U)
199 EJS (C)	600 HQS (A)	1300 TWH (6)	2110 G75 (X)	2630 SPY (V)	3680 34X (2)	3940 3QK (M)	4210 3A5 (R)	4480 32Y (V)
200 3SF (J)	610 M13 (O)	1310 VRK (2)	2115 P33 (M)	2640 U7F (9)	3690 1Y2 (A)	3950 P2K (7)	4220 3NY (J)	4490 1Q3 (K)
210 98C (9)	630 RKA (F)	1399 E5N (6)	2117 N6T (Q)	2650 CPJ (J)	3695 FJO (S)	3960 3UK (6)	4230 O2Y (9)	4495 GJL (5)
220 3LS (T)	699 EJX (1)	1400 1PD (D)	2120 DL7 (2)	2660 V2O (Y)	3700 1J2 (L)	3970 3WK (7)	4240 XAG (8)	
230 8QL (5)	700 ODN (M)	1410 VVK (C)	2125 P53 (8)	2999 EWP (W)	3710 MJX (3)	3980 3YK (5)	4250 WG7 (5)	
240 U6L (L)	710 WO4 (8)	1499 E9N (D)	2130 N3T (C)	3000 586 (K)	3720 MUT (X)	3990 WNX (K)	4260 C7Y (F)	
245 TFV (O)	712 VNO (K)	1500 VRH (7)	2140 93T (6)	3010 5QL (3)	3730 MWT (3)	4000 2CL (J)	4270 3YY (6)	
250 RT6 (9)	715 7CS (3)	1510 FLK (A)	2150 SYM (N)	3020 VRV (D)	3740 P6T (T)	4010 2EL (K)	4280 ODY (V)	
299 EJT (2)	730 8RJ (S)	1520 NMC (U)	2155 VWL (K)	3030 EML (G)	3750 HQR (K)	4020 2GL (J)	4290 1G3 (J)	
300 53T (Y)	740 XYT (8)	1530 W4K (V)	2160 T76 (O)	3499 E9Q (A)	3760 P2X (6)	4030 MTL (O)	4295 GAP (3)	
310 GY5 (1)	799 EJY (6)	1599 EEN (U)	2170 GJY (6)	3500 192 (1)	3770 MWX (Q)	4040 2LL (2)	4300 113 (D)	

Four heads are better than one



PETER HARTLEY speeds up his printing helped by the latest technology

WHEN the press release announcing the arrival of the Precision 4010 dot matrix printer proclaimed that it had four print heads, no one in the office believed it.

The printer itself arrived a week later and sure enough, there were four print heads mounted horizontally in line.

The theory is simple: If one print head travelling over 80 columns can produce 120 characters per second (cps), four heads travelling over 20 columns each will print at 480 cps.

To give you an idea of how fast 480 cps is, a 1000 word document which occupies about 6k of ram will take 26 seconds to print out in draft mode. In near letter quality (NLQ) mode the print time is just under three minutes while a screen dump takes just under one minute.

As you can probably imagine, four times the noise is also generated, but the 4010 has a very effective top cover which reduces the decibels to an acceptable level.

The design seems to have been very well thought out. There is the usual bank of DIP switches for setting various modes – such as carriage return with or without line feed, character sets, line spacing and so on.

Unlike most printers these are not tucked away at the rear of the case, they are on the front panel under a removable lid – and they can be set with human fingers not microscopic pin points. On the underside of the lid is a list of the switches' functions and how they were set at the factory.

NLQ or draft mode, on or off line, form and line feed are accessed by push buttons on the main panel. LEDs indicate power status, NLQ mode, paper out and ready.

The 4010 operates in IBM and Epson modes – selected by a switch. Although IBM mode won't be of much interest to Atari owners, if you have been using an IBM printer and all your programs are configured to output to that machine, it means that you can plug in and go without having to load in new printer drivers.

Epson mode has all the facilities you would expect – normal Ascii, international characters and italics are all available in draft or NLQ mode.

Both modes have pica and elite typestyles, condensed and double width printing styles and superscript or subscript facilities. All these options are software-selectable by sending the appropriate escape codes.

On the negative side there is very little to complain about – the only problems we experienced were caused by the multi-strike carbon ribbon. When we first set up the printer, the ribbon was prone to jamming as the thin carrier film would stick between the pinch rollers.

This problem was soon solved with the aid of a, jeweller's screwdriver. The other problem was much more serious.

Doing the screen dumps caused me to join the Black Hand gang. The carbon "ink" didn't want to stay on the paper. It migrated on to my fingers, the printer case, the computer keyboard and various parts of my body.

Worse still, it smudged on the paper very easily. This resulted in more than one dump having to be redone. There doesn't seem to be much point in having a printer working at four times the speed if you have to use four times as much paper!

To be absolutely fair, we use a high quality paper with a very hard surface. The normal quality of fanfold paper has a more fibrous surface and may retain the carbon to a much higher degree. The option of a standard fabric ribbon would be a welcome accessory in this office.

With the exception of the ribbon problems, the printer performed exceptionally well over the review period.

The manual is supplied with the 4010 is very comprehensive. However, as it's printed in Japan, where the printer is made, there are a few examples of that special blend of Japanese/English which we have all come to know and love.

An example from page 96 reads "Beside of the buffer conditions in paragraph (3), in case of printer status error (in such the case of paper out) occurs, the flag is set also."

Regardless of the above, there is more than enough information provided to allow you to get the most from your new printer. Items covered range from technical specifications, through installation procedures, software switches and escape codes to complete lists of available characters in both IBM and Epson modes.

For all the high technology, the cost of the 4010 is a very reasonable £424 – including Vat. Reliability should be high because each head is doing only a quarter of the work.

The specifications reveal that expected head life is 200 million characters and average output before failure is 10 million lines – although the printer head and ribbon drive unit (which must be the hardest working component), are excluded from this figure.

Product: Precision 4010 printer.
Price: £424.35.
Supplier: Precision Software, 6 Park Terrace, Worcester Park, Surrey. KT4 7JZ
Tel: 01 330 7166

ATARI USER Classifieds

Has upgrading your computer given you hardware you no longer need? Or have changing interests left you with unwanted software? Then THIS is the place to advertise your surplus items. *Atari User* readers are always on the lookout for a bargain and this is the first place they look!

An added bonus!

Your advert will also be automatically displayed on MicroLink, the electronic mail service operated in association with Telecom Gold. This means it will be seen by thousands of computer enthusiasts who can send an instant response.

Classified advertisements will be accepted under the following conditions:

- This service is EXCLUSIVELY for the use of private readers. No trade ads will be allowed.
- To avoid encouraging software piracy, all ads will be carefully vetted before they are accepted.
- Ads can only be accepted on this form (or a photocopy of it).
- There is no maximum to the number of words you include in your ad. If there is insufficient room on the form, continue on a separate sheet of paper.
- The cost is 20p per word, with a minimum of 10 words.
- We GUARANTEE your ad will appear in the December issue (on sale November 25) providing it is received by October 25.

- Atari 130xe, disc drive, printer cassette deck, software, books. Tel: Nigel 0622 46099 for more details and arrange a demo.
- Wanted: Centronics interface for 800XL. Tel: 0382 454475 after 6pm.
- Atari 800XL, 1050 drive, 1029 printer all for £350 cash no offers. Tel: Leeds 0532 491237 ask for Kev.
- I'm going to university have unused Atari 800XL, 1050 drive, 1029 printer, 410 recorder, joysticks, cartridges, 50+ software titles £250. Tel: Colchester 0206 573654.
- Brother M1009 printer and Atari interface for sale. Also eight ribbons, roll paper holder and roll paper. All for £90. Tel: Farnham (0252) 713775.
- Mapping the Atari (revised) machine lang for beginners, 6502 m/c for beginners. Will sell separately price negotiable. Tel: Fareham (Hants) 220087.
- Stuck on your favourite game? We can supply hints, tips and maps. Send s.a.e. To: Brockford Hint, 28 Tremaine Grove, Hemel Hempstead, Herts for more details.
- Atari 800XL 1010 and 1050 disc drive + software £200. Tel: Livingstone 0506 30194.
- Atari 800XL wanted due to desperation. S C Robins, 48 Cheltenham Mount, Harrogate, HG1 1DL.
- 1027 printer £80, software on discs and cassettes all as new. Tel: 0268 418698.
- Living Daylights, Inter Karate, Arkanoid, Gauntlet, Phantom, Spindizzy, Electra Glide, Trail Blazer, Starquake, Spy v Spy2, Green Beret, Hardball, Mercenary, Compendium, Dropzone, 15 budget worth £190, sell £80. Tel: 041 772 8632.
- 1010 recorder and atari french course £20. Original disc software for sale, prices from £5. Tel: Brentwood 216112.
- Original cassettes software for sale, many old time classics, s.a.e. lists to Greensward, Rowplatt Lane, Felbridge, East Grinstead, Sussex, RH19 2NY.
- For sale Atariwriter disc plus £22 worth of games on cassette for £30. Tel: 0656 724417 after 5pm ask for Brian.
- Brand new MP165 nlq printer, interface, At.writer+, cost £270, sensible offers. Tel: Stewart (Portsmouth) 823880.
- 130xe and handbook new boxed unwanted gift £85. Tel: 01 504 7652.
- Cheap xl/xe games, word processos, utilities, tapes, discs available due to upgrade, s.a.e. for list - Caley, Station Farm, Elmham, Dareham, Norfolk.

Fill in now for the next issue

					10 words £2.00
					15 words £3.00
					20 words £4.00
					25 words £5.00
					30 words £6.00

Cheque enclosed for £________

I certify that any software offered for sale is original and not a copy

Signed________

Name________

Address________

POST TO: Atari User Classifieds, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

In the black

DAVID WILSON helps you to computerise loan repayments

HAVE you ever wondered how much you still owe on your loan? You know how much you borrowed, the interest rate and how much you are paying but the amount outstanding is often a mystery.

This program gives a rough guide to the answer. It can only be approximate because of the different ways interest is added – monthly, quarterly, half-yearly or annually.

It is based on the interest being calculated added on quarterly with the first addition one month after the loan was taken out. This gives quite accurate results when the results of the program are compared with bank loan figures.

When you run the program you have to give the program three values: the amount borrowed, the interest rate and the rate of repayment.

The amount borrowed should be in pounds, the interest as a percentage, and the repayment in pounds and pence. Sample figures for you to try are £1000, 12.5% and £33.39 and the loan will be paid in 3 years.

Once you've entered the figures you will be presented with data for the first year. You are reminded how much you borrowed, the rate and the amount you are paying each month together with the following information:

Interest shows the amount added to what you owe. It's added each quarter and you'll notice that, providing you've entered realistic figures, it is less each time. This is because the interest is calculated on what you owe – and you're paying some off all the time.

Tot Paid lets you know how much you've paid all together. *Tot Int* gives the figure for the total interest you've paid to date. The difference between this and *Tot Paid* shows how much of your money has gone towards actually paying off the loan. *Balance* indicates the sum you still owe.

Once you've studied the figures for the first year, pressing any key will take you to the second and you can continue until the balance falls below zero which means the loan has been paid off.

The real use of this program is for checking the "What if?" possibilities of different repayments and interest rates where even the slightest changes can alter the time required for pay-off dramatically.

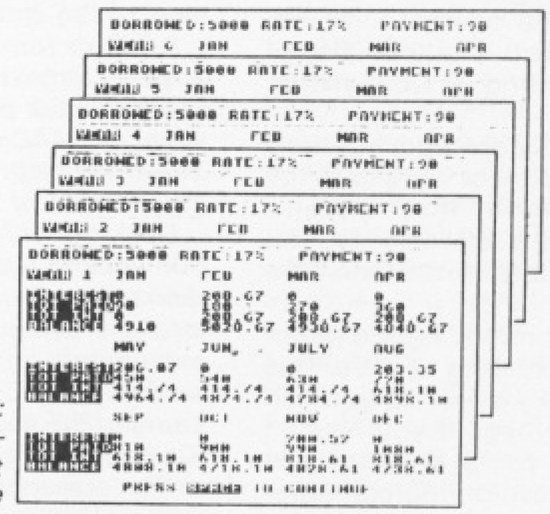


Figure I: Typical output- repayments at a glance

```
10 REM LOAN CALCULATOR
20 REM BY DAVID WILSON
30 REM (c)ATARI USER
40 GRAPHICS 0:SETCOLOR 2,0,0:POKE
752,1:YEAR=1:DIM MONTH$(36)
50 POSITION 14,0:? "LOAN CALCULATOR"
60 ? :? "HOW MUCH ARE YOU
BORROWING";:INPUT BAL:BOR=BAL
70 ? :? "WHAT IS THE ANNUAL INTEREST
RATE";:INPUT RATE
80 ? :? "HOW MUCH ARE YOU PAYING A
MONTH";:INPUT REPAY
90 RESTORE
100 ? CHR$(125)
110 FOR COUNT=1 TO 3
120 POSITION 0,(COUNT*7-3):?
"INTEREST"
130 POSITION 0,(COUNT*7-2):?
"TOT PAID"
140 POSITION 0,(COUNT*7-1):? "TOT INT"
150 POSITION 0,(COUNT*7):?
"BALANCE":NEXT COUNT
160 ACROSS=1:DOWN=2
170 RESTORE
180 POSITION 0,0:?
"BORROWED:";BOR;:POSITION 14,0:?
"RATE:";RATE;:? "%";:POSITION 25,0:?
"PAYMENT:";REPAY
190 POSITION 0,1:?
"--------------------------------------
--"
200 POSITION 0,2:? "YEAR ";:? YEAR
210 YEAR=YEAR+1
220 CLOSE #1
230 FOR COUNT=1 TO 12
240 TIN=0
250 IF COUNT=2 OR COUNT=5 OR COUNT=8
OR COUNT=11 THEN LET
TIN=BAL*(RATE/400)
260 READ MONTH$
270 TOTINT=TOTINT+TIN
280 TOTAL=TOTAL+REPAY
290 BAL=BAL-REPAY+TIN
300 POSITION (8*ACROSS),DOWN:? MONTH$
310 ?
320 POSITION (8*ACROSS),DOWN+2:?
INT(TIN*100+0.5)/100
330 POSITION (8*ACROSS),DOWN+3:?
INT(TOTAL*100+0.5)/100
340 POSITION (8*ACROSS),DOWN+4:?
INT(TOTINT*100+0.5)/100
350 POSITION (8*ACROSS),DOWN+5:?
INT(BAL*100+0.5)/100
360 ACROSS=ACROSS+1
370 IF COUNT=4 THEN ACROSS=1:DOWN=9
380 IF COUNT=8 THEN ACROSS=1:DOWN=16
390 IF BAL<0 THEN COUNT=15
400 NEXT COUNT
410 ? :POSITION 9,23:? "PRESS SPACE TO
CONTINUE";
420 OPEN #1,4,0,"KEY":GET #1,KEY:IF
KEY=32 THEN 430:CLOSE #1:GOTO 420
430 IF BAL>0 THEN GOTO 100
440 ? CHR$(125):POSITION 15,10:? "LOAN
REPAID"
450 GOTO 450
460 DATA
JAN,FEB,MAR,APR,MAY,JUN,JUL,AUG,SEP,OC
T,NOV,DEC
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	4074	20	3987	30	3380
40	11106	50	12148	60	10507
70	9949	80	10290	90	1733
100	1737	110	3229	120	10470
130	10332	140	9555	150	10650
160	3158	170	1733	180	19548
190	8373	200	7381	210	2344
220	1559	230	3375	240	1084
250	14078	260	2302	270	3777
280	3780	290	3441	300	6708
310	254	320	9141	330	9420
340	9789	350	9045	360	3198
370	6318	380	6468	390	4032
400	2384	410	10816	420	11464
430	3754	440	7678	450	1629
460	10514				

Plug in your desktop kit

Neil Fawcett finds an add-on which gives more power to his 130XE

THE Atari 8 bit home computers have been around for a long time and their superb design makes them still one of the best, if not the best in my books. Internally their electronics has kept them at the top of a fluctuating market while lesser machines have vanished into total obscurity.

Many hardware add-ons have come and gone, but now Computerhouse have come up with one of the best internal modifications to an Atari I have ever seen.

One of the features of more powerful micros is that of the desktop, which allows you a multitude of different functions while running other software.

Now this is available to Atari 8 bit owners by installing the OS controller card. The package comes complete with a plug-in board, a master disc of desktop utilities and a well-written manual.

The board is very compact but does require a fair amount of work to fit it. I would recommend that anyone thinking of buying a board sends their computer to Computerhouse who offer to fit it free.

Fitting involves removing the motherboard and desoldering two ICs. This is not a job for a novice, as you can cause a lot of damage if you haven't got the proper tools and are not experienced in desoldering computer boards.

The chips you remove plug into the new board and so allow you control over the operating system. You then solder two sockets in their place and plug the board into one and attach a custom link lead to the other.

You then solder a read/write fly lead to a leg of the 6520 PIA chip before reassembling the micro.

The board has six switches that must be positioned outside the micro, so when you reassemble it you will have to have a think about where they should go.

For simplicity I left the lid off my computer. Once installed, you can use the switches to affect the way that it works. The settings are shown in Figure I.

Let's look at their functions and the way they affect the board's features in more detail. The Desklock protects the card from being re-programmed by a program as it is loading. This switch should normally be set to off for most uses of the card.

Desktop ram mode is included for anyone who wishes to write their own utilities via a programming language such as MAC/65 Macro Assembler. The manual provided provides a full explanation of how to do this.

Desktop on/off alters the various utilities and system parameters when desktop software has been booted into the system. Basic on/off is self explanatory but a useful piece of information to know at this point is that some of the 61618 20 pin custom Atari ICs have a bug, so if you get garbage on the screen when you have selected Basic off then you need a new bug-free chip or don't use this option.

Now on to describing the desktop features that come on the master disc. When you boot up the first menu you are presented with six features as shown below and each will bring up another menu from which different options can be chosen.

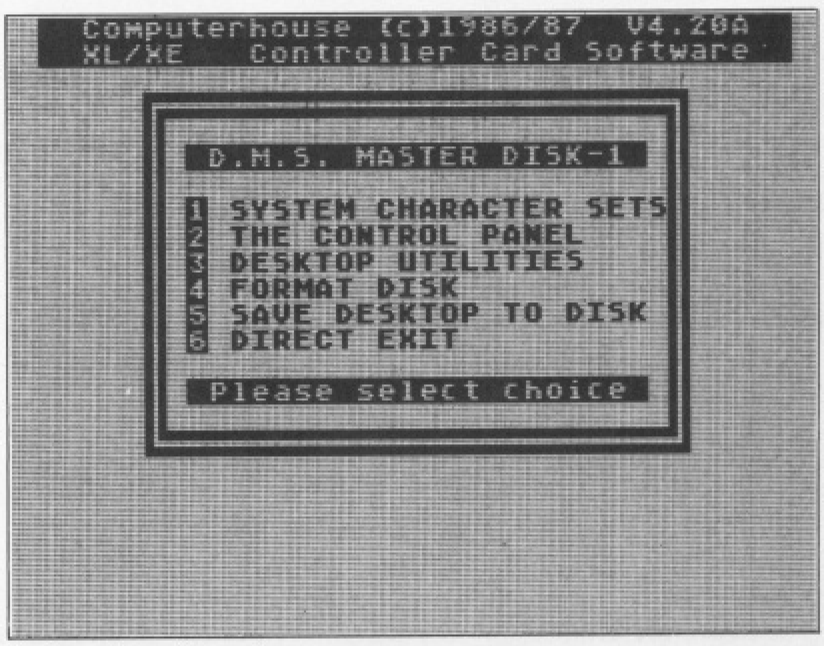
You can alter the system character set with the choice of 14 different sets. You can also alter a variety of system parameters including auto-scroll, key click, fast cursor and cassette baud rates.

The Super Dump II routine will dump the entire contents of memory to disc. It's also possible to convert your existing multi-boot menus to a desktop resident menu or save the computer's OS to disc to create a true emulator, or upgrade custom roms to work from the desktop.

For me one of the most useful and fun features of the board is the printer dumper. It creates an A4 sized dump and you have the option of selecting your own shades to represent one of the five primary colours.

There are three options: Draft, SHQ I and SHQ II. SHQ is a bit image equivalent of NLQ and gives a very high quality printout on machines capable of 216/n line feed. These features work on all Epson compatible dot matrix printers and are very easy to use. It is important to have the desklock switched off.

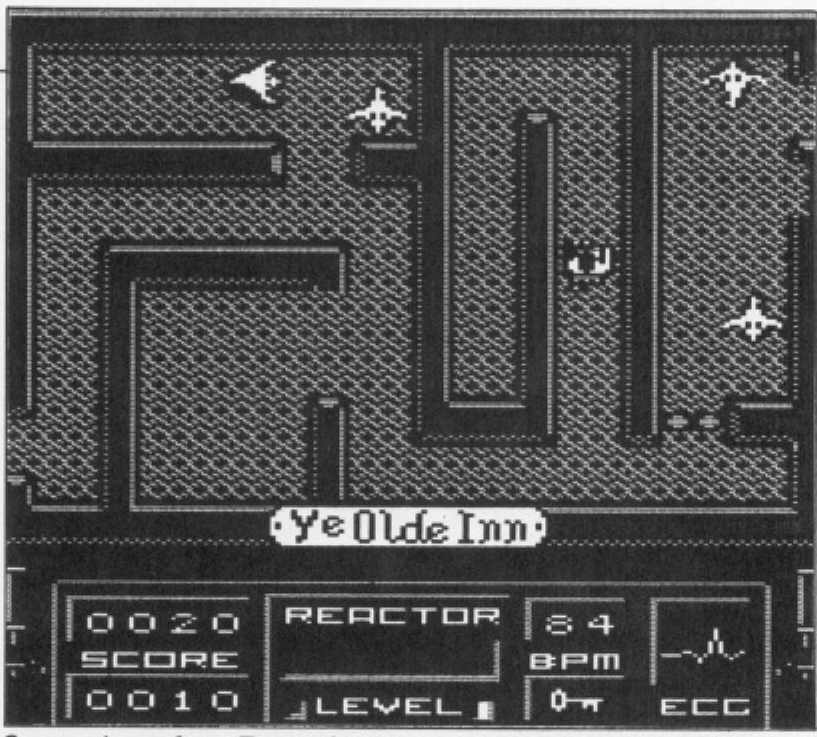
You can analyse the contents of a



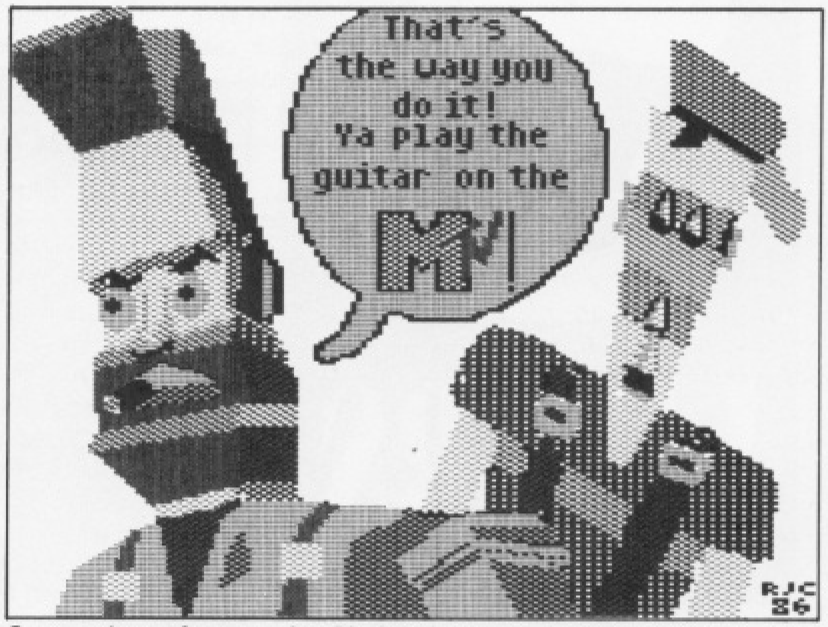
Options from the main menu

Desktop control	Basic control
A Desklock	1 Basic disabled
B Desktop ram mode	2 Basic enabled
C Desktop on	
D Desktop off	

Figure I: The switch settings



Screen dump from Tynesoft's Phanton



Screen dump from an AtariArtist picture

disc and dump the results to a printer. There is also the format option that will initialise your discs in single density. Once you have configured the OS parameters you can create a boot disc which you can load everytime you require these settings.

It is possible to initiate a coldstart from the main menu, and this allows you to load software into the system with the desktop software resident.

These are the features that you get when you first buy the board, but one of the great things about it is the fact that it is software controlled and so is only limited by the quality of programs available for it. This means that although the card is a hardware modification it is extremely expandable and very easy to use.

In the parcel that I received to review were two library discs – the 1029 Snapshot printer dumpers and the SHQ professional print link package.

The former is similar to the snapshot routine, but is designed for the Atari 1029 printer – which is so often left out in the cold. Computerhouse says that the other library utility gives a printout on an Epson 8 pin dot matrix printer with reverse line feed that can only be rivalled by a laser printer.

I tested the printout quality and it is superb. Boasting that it rivals a laser printer is a little naughty, but it is certainly one of the best dumper routines I have seen on an 8 pin Epson.

There are three variations of graphics converters on the disc. The first is for use with Typesetter desktop publishing software packages, the second is for use with Lister/Picture software and the final one is designed to for use with Mini Office II to give enhanced quality on text printouts.

It is important to note that the library discs do not come in the original package and must be bought off Computerhouse for £12.95 for the Snapshot and £16.95 for the print link package.

I have seen just about every add-on for the Atari 8 bit computers on the English and American markets and must rate this one a winner. It is very well documented and easy to use.

At the moment Computerhouse is designing more library discs. The first will be a printer toolkit which will use the 130XE's 128k memory as a printer buffer, a colour screen dumper for the Epson JX-80 printer and a variable size screen dumper that will allow you to print where you want on the paper.

There will also be a general purpose disc that will have all sorts of interesting utilities like a clock, a note pad, calendar and appointment menu and a redirector that will allow you to play around with your handlers and send screen data to a printer or a ramdisc. So if you feel like turning your poor old computer into a new super computer then this is the product for you.

Product: OS Controller Board
Price: £69.95 (800XL), £79.95 (130XE), £9.95 (optional OS switch pack)
Supplier: Computerhouse, 14 Romily Court, Landridge Road, Fullham, London, SW6 4LL.
Tel: 01-731 1276



Confirmation of new character set installed



Screen dump from an AtariArtist picture

5 LINERS

MINI-DOS
from T. Mahon

This performs six of the functions of DOS 2.5 saving you from going to Dos each time you want to perform a simple Dos function. If DUP.SYS is removed and Minidos put in its place it saves 36 sectors on the disc. Some lines may need abreviations in order to fit them in. When typing the question marks, in line 10 type the inverted commas directly after. Use G. instead of GOTO and GOS. instead of GOSUB. The routine gives you the following functions:

Dir Displays directory of drive specified and must be followed by a number from one to eight.

Delete Deletes file(s)

Lock Locks file(s).

Unlock Unlock file(s).

Rename When the program prompts for a filename type D: followed by the file you wish to rename followed by a comma and finally the new name of the file. For example:

D:MINIDOS.5LR,MINIDOS

Format With DOS 2.5 there are two types of format and both of these have been included in Minidos. To stop you from accidentally erasing your discs, Control must be pressed with S or E which specifies SINGLE or ENHANCED density.

PROGRAM BREAKDOWN

10 Displays the menu and goes to line 50 to wait for a keypress.

20 Checks to see if the key was a number, and displays a directory.

30 Works out the XIO commands. If the command is higher than 252 it executes it.

40 Asks for filenames and uses the name in the XIO command.

50 Waits for keypress.

```
10 CLR :DIM F$(40):? "KDelete":? "Prot
ect":? "Unprotect":? "Format CTRL S or
E":? "Dir 1 or 2":? "Rename":GOSUB 50
20 IF K>=49 AND K<=56 THEN F$="DX:*.*"
:F$(2,2)=CHR$(K):OPEN #1,6,0,F$:FOR A=
1 TO 64:INPUT #1;F$:? F$:TRAP 50:NEXT
A
30 X=33*(K=68)+35*(K=80)+36*(K=85)+254
*(K=5)+253*(K=19)+32*(K=82):IF X>252 T
HEN XIO X,#1,0,0,"D1:":? "↓Done":GOTO
50
49 ? "↓Which File(s)(D:):";:INPUT #16;
F$:XIO X,#1,0,0,F$:GOSUB 50:GOTO 10
50 TRAP 10:CLOSE #1:TRAP 10:? "↓Press
a key":OPEN #1,4,0,"K:":GET #1,K:CLOSE
 #1:RETURN
```

Get it right! II

```
10 94K (8)
20 VDO (O)
30 C8P (D)
40 9Q8 (E)
50 8QC (A)
```

COPY 5 DOUBLE DENSITY DISC DUPLICATOR
from Simon Reason

THIS program backs up a double-density disc – and in only five lines. First of all format the destination disc to double density, and then run this program. Insert the required disc when the prompt asks for it and press Return.

The program will back up a DOS 2 formatted disc, as it ignores file names and copies sector by sector. It is not designed to copy bad sectors and so it will not copy protected software.

The program works by using a short machine code routine (5 bytes) to call part of the disc operating system.

```
1 DIM B$(26752),A$(1):B$(26752)=".":FO
R R=1536 TO 1540:READ A:POKE R,A:NEXT
R:FOR R=0 TO 4:GOSUB 2:GOSUB 4:NEXT R:
END :DATA 104,32,83,228,96
2 ? "INSERT SOURCE";:INPUT A$:POKE 770
,82:C=0:FOR T=R*208 TO (R+1)*208:A=ADR
(B$)+(128*C):POKE 778,T-(INT(T/256)*25
6)
3 POKE 779,INT(T/256):POKE 772,A-(INT(
A/256)*256):POKE 773,INT(A/256):A=USR(
1536):C=C+1:NEXT T:RETURN
4 ? "INSERT DESTINATION";:INPUT A$:POK
E 770,87:C=0:FOR T=R*208 TO (R+1)*208:
A=ADR(B$)+(128*C):POKE 778,T-(INT(T/25
6)*256)
5 POKE 779,INT(T/256):POKE 772,A-(INT(
A/256)*256):POKE 773,INT(A/256):A=USR(
1536):C=C+1:NEXT T:RETURN
```

PROGRAM BREAKDOWN

1 Initialisation: Sets up the buffer space (B$), reads in the machine code and controls the FOR-...NEXT loops that jump to the subroutines.

2,3 Read source subroutine: Displays a prompt for the source disc to be put in drive #1, and then POKEs 770 with 82 (the READ command). It then uses another FOR.. NEXT loop to fill up the buffer space, using 778 and 779 as the sector to be read, and 772 and 773 as the address of the buffer.

4,5 Write destination subroutine: Displays a prompt for the destination disc to be put in drive #1, then it POKEs 770 with the WRITE command (87) and then POKEs 778 and 779 with the destination sector number, and 772 and 773 with the address from where the 128-byte sector will come from.

Get it right! II

```
1 P9A (K)
2 PGY (6)
3 44N (Y)
4 JPS (W)
5 44Q (2)
```

IF you've written any useful or interesting five line programs why not send them to us to grace our pages?

We pay £25 for each one published.

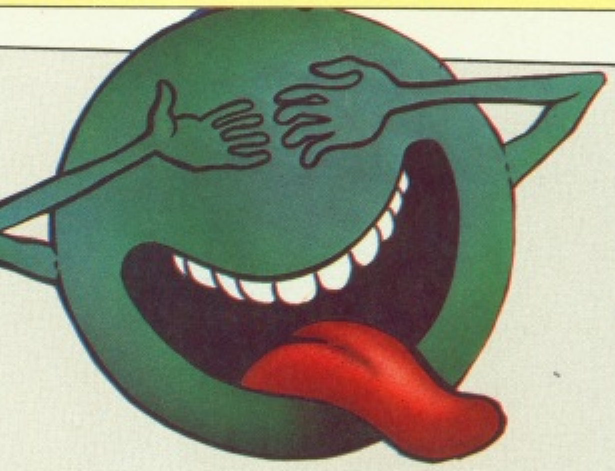
You should give a full description of the routine and any other details that are relevant. And remember if you want your material returning please enclose a suitably stamped package.

Win £25

Simply send a copy of the program on disc or tape together with the documentation – preferably as a word processed file – to:

Atari User, Europa House, 68 Chester Road, Hazel Grove, Stockport, SK7 5NY.

MINI-PACMAN II
from Mark Phillips



IN the September issue of *Atari User* there was a five liner called Mini-Pacman by Robin Edwards. Here is another based on the original idea, but with some extras.

The original was well written, but the display suffered from being small and devoid of colour because it runs in text Mode 0.

This Mode 18 version gives a full screen display and four colours while retaining Mode 0 text. The characters are also repositioned on screen to give a neater effect. to enter the program, you must use the abbreviations shown:

POKE	PO.
GRAPHICS	GR.
LOCATE	LOC.
SOUND	SO.
POSITION	POS.
NEXT	N.
INPUT	IN.

Omit all spaces where possible and note that there are nine spaces between the quotes in line 5.

```
1 ? "LEVEL(1-9)":INPUT E:GRAPHICS 18:P
OKE 752,1:? #6;"  power":X=5:Y=1:T=0:A
=13:B=10:FOR Z=1 TO 10:POSITION 5,Z:?
#6;"..........":NEXT Z
2 LOCATE X,Y,C:LOCATE A,B,D:POSITION X
,Y:? #6;"<":POSITION A,B:? #6;"↑":S=ST
ICK(0):IF C=46 THEN SOUND 0,100,10,10:
C=32:T=T+1
3 X1=(S=7 AND X<14)-(S=11 AND X>5):Y1=
(S=13 AND Y<10)-(S=14 AND Y>1):X=X+X1:
Y=Y+Y1:SOUND 0,0,0,0:POSITION 2,2:? #6
;T
4 POSITION X-X1,Y-Y1:? #6;CHR$(C):POSI
TION A,B:? #6;CHR$(D):IF RND(0)<E/10 T
HEN A=A+(X>A)-(X<A):B=B+(B<Y)-(B>Y)
5 ON (X=A)+(Y=B)<>2 GOTO 2:POSITION 2,
1:? "GAME OVER":POSITION 2,2+(T=100):?
" You Win!":POSITION 2,2:? "
":? :? :RUN
```



Get it right! II

```
1 FE4 (G)
2 KOO (Y)
3 APD (F)
4 84X (N)
5 8M7 (K)
```

PASSWORD
from Chris Read

IN the world of mainframe computers and communications it is usual to have to enter a password when you start. This program can be added to the beginning of your program to make it necessary for a user to enter a password before it will execute.

In the program the password has been set to YOURWORD, but you can change this to any combination of eight letters, numbers or control characters of your choice. Just replace YOURWORD in line 10 with what you want.

For those of you who wish to use this as a security measure rather than a bit of fun you will have to take extra precautions to stop the program being listed. For example, changing the END to NEW in line 20 will cause the program to be deleted from memory if three unsuccessful attempts are made – but don't forget to save it first.

The program makes use of the Atari's ability to accept words such as PASSWORD$ and TRIES as variable names, which I hope makes the programming easier to understand. Typing in the program is straightforward and only PRINT is abbreviated.

PROGRAM BREAKDOWN

10 Dimensions variables and OPENs keyboard for the GET command.

20 Draws to screen and implements TRIES.

30 POKES 764,255 to clear keyboard buffer before the GET command. Converts the Ascii number of the keypress into a character using CHR$ and places it in the ENTRY$ string.

40 The eight characters entered are compared with PASSWORD$. If incorrect the programming returns to line 20 for another go. The FOR/NEXT loop keeps the message on the screen long enough to be read.

50 Prints a message.

```
10 DIM PASSWORD$(8),ENTRY$(8):PASSWORD
$="YOURWORD":TRIES=0:GRAPHICS 18:POKE
712,2:OPEN #1,4,0,"K:"
20 POSITION 1,4:? #6;"  ENTER PASSWORD
  ":POSITION 6,6:? #6;"--------":TRIES
=TRIES+1:IF TRIES>3 THEN END
30 POKE 764,255:FOR X=1 TO 8:GET #1,A:
ENTRY$(X)=CHR$(A):POSITION 5+X,6:? #6;
"*":NEXT X
40 IF ENTRY$<>PASSWORD$ THEN POSITION
1,4:? #6;"PASSWORD INCORRECT":FOR DELA
Y=1 TO 2000:NEXT DELAY:GOTO 20
50 POSITION 2,4:? #6;"PASSWORD CORRECT
":POSITION 0,6:? #6;"running main prog
ram":FOR DELAY=1 TO 5000:NEXT DELAY
```

Get it right! II

```
10 WUM (3)
20 C5E (2)
30 8JN (G)
40 78A (8)
50 MKL (L)
```

Mini Office II



WORD PROCESSOR
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I enclose cheque made payable to Database Software, or debit my Access/Visa card:

☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

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Signed ....

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AT 11

Where the Bounder can go wrong

CONGRATULATIONS on your superb magazine. I have been an Atari User reader for a year and a half now, and have enjoyed the games, utilities and practical hints, which I have found very useful. Keep up the good work.

I have had my Atari 800XL for more than a year. In the July 1987 issue of Atari User *I found two errors – one in each of the games. The first one is on line 1820 of Moneybags.*

Although I have heard from the magazine many times that the lists are listed directly I am afraid this time something must have gone wrong. The line reads :

```
1820 READ J:IF J=-1 THEN 1850
```

There is unfortunately no line 1850 and the result is an error 12. The line should read:

```
1820 READ J:IF J=-1 THEN 1860
```

You couldn't have been expected to notice the second error but in Bounder the program runs perfectly except for on one occasion.

When you're using the two players option, if you play badly on round three and you are player number one and you happen to kill both men before using up your darts, the program goes to the end without giving player two his turn on round three.

I have corrected this by making the following small adjustment:

```
182 IF Y>=81 AND Y<=105 A
ND AP(N3) THEN YB=N6:AP(N3
)=N:AP(N2)=AF(N4):TMAN=1:G
OTO 195
183 IF Y>=145 AND Y<=169 A
ND AP(N4) THEN YB=14:AP(N4
)=N:AP(N2)=N:AP(N1)=AP(N3)
:BMAN=1:GOTO 195
191 IF ROUND=3 AND TMAN=1
AND BMAN=1 THEN TMAN=0:BMA
N=0:DEAD=1:RETURN
194 GOTO 199
```

This may not be the best way of curing it, but with my limited knowledge of Basic it is the best I can do for now. And it seems to work all right. – **J.D. Tyler, Eltham. S.E.9.**

● Our listings are taken from working versions of the program, but unfortunately in the case of Bounder we removed the "unnecessary" REMs after testing, so the slight error occurred.

Double trouble

I HAVE got an Atari 1050 disc drive. A few months ago I had a Doubler fitted and for a few months it was fine. Then last week it started to play up and now it won't write or format discs.

Could you tell me what is wrong with it or tell me what to do with it. – **David Dickinson, Crewe, Cheshire.**

● The trouble could be a fault in the FDC (floppy disc controller) chip inside your drive. This is soldered in, so it would be best if you have your drive checked by a competent dealer.

Wandering addresses

I READ with interest, in the August issue of Atari User, the article Mailmerge written by Louise Collinson. I was, as it happens, in the middle of producing a personal mailing list for my own private use – letters plus labels and so on.

While doing this, I had run into difficulties trying to set up the master letter blank to be used with the database file because I wanted to print the two addresses on the same line, one on each side of the page. As the addresses varied from letter to letter in length per line so the other moved in sympathy.

The solution is that when you set up your address data record be careful to set an adequate and equal field size for all the fields to be used in the address.

When supplying information to each record field in the database, you must use all spaces allocated to ensure that your addresses have a standard length.

In the word processor the only further adjustment necessary is to allow for variable lengths of embedded commands and this is simple to adjust when using the preview mode. In addition I also allow extra fields of the same length for possible future use.

You can criticise this as a waste of valuable memory, but normally the availability is more than adequate.

I hope this proves to be useful and informative to anyone starting to put Mini Office II to work as, I increasingly intend. – **D.M. Hill, Stranraer, Wigtownshire.**

Polish winner

I AM one of the prize winners in the Atari User Birthday Contest. I am very pleased because here in Poland, in my town Olsztyn, it is rare to have such luck.

Unfortunately there is a mistake in the spelling of my name: It should be Grzybek.

Thank you very much for the correction of my name. – **Antoni Grzybek, Poland.**

Tricks of the trade

I THINK Atari User *is excellent and it almost couldn't be better. But it would be perfect if you could devote a page or so to PEEKS and POKES, because I would like to know as many tricks as possible and as you know these provide many interesting effects.*

For instance, how do you get the Start key to start a game? – **I. Espejo, London S.E.21.**

● To get Start working as you want you must PEEK location 53279 to see if one of the function keys has been pressed. If, when you PEEK the location, you find a 3 then Option has been pressed, a 5 indicates that Select has been pressed and a 6 means Start was pressed.

Here is a simple program to start your game:

```
10 PRINT "Hit the START key to
 begin"
20 IF PEEK(53279)=6 THEN GOTO
 40
30 GOTO 20
40 PRINT "THE GAME HAS NOW
 STARTED"
```

The program sits in a loop looking at location 53279 waiting for a key to be pressed. By adding other lines to look for a 3 or a 5 you can use the various options available.

Do any of our readers

Turn to Page 48 ▶

◀ From Page 47

have any useful PEEKS and POKES we could pass on? For the time being here are a few that give interesting effects for you to play with:

```
POKE 755,0
POKE 755,1
POKE 755,4
POKE 755,6
POKE 710,95
POKE 711,95
POKE 712,95
```

For more information read Mapping the Atari, written Ian Chadwick and published by Compute! books.

ATARI USER Mailbag

WE welcome letters from readers – about your experiences using the Atari micros, about tips you would like to pass on to other users . . . and about what you would like to see in future issues.

The address to write to is:

Mailbag Editor
Atari User
Europa House
68 Chester Road
Hazel Grove
Stockport SK7 5NY

Cricket on the 800XL

PLEASE could you let me know if any cricket games have been released for the Atari. I have a 800XL. – **R.E.B Harding, Evesham, Worcs.**

● To our knowledge no cricket games have been released for Atari 8 bit computers. Have any of our readers written one that we could publish in *Atari User*?

Run-Time Library

I HAVE had my Atari for four years now and I've done most of my programming in Basic, as I found machine code too complicated.

After reading your review of Action! by OSS I decided to buy it. When it arrived I immediately plugged in the cartridge and hunted through the manual for a program to try. I was very impressed with the speed the program ran.

Since then I have written a game, and a sprite designer and I am currently writing a space trading game. The only problem is that my programs won't run without the Action! cartridge plugged in.

You mentioned a Run-Time Library in your review. Is this part of the Action! toolkit? If not, could you please tell me where I could obtain the Run-Time Library from? – **Mark Strefford, Flint, Clywd.**

● The Action toolkit and Run-Time Library are two separate packages.

The toolkit is a selection of useful programming routines to give features like floating point maths and player missile graphics.

The library program allows you to create a free standing, self contained file that will execute without the Action! language cartridge. The packages cost about £29.95 each.

Interface needed

I AM an Atari 130 XE owner and would like to know why so many games on the 8 bit Atari are only for 48k machines.

I know that the old 400/800 machines only have 48k or less, but if the program makers could write software for 64k computers then we XE/XL owners would have much more value for our money. The games could then have much better graphics than many have today.

The solution could be that Atari build a cartridge/interface to give the old 400/800 computers 64k of memory. And when the old machines are 64k then the program makers could do some software like Road Runner, Last Ninja and so on.

Are there any other readers who have the same thoughts as me? – **Niclas Bjorkholtz, Sweden.**

Using GAD pictures

AFTER recently buying Graphics Art Department I decided I would like to use some of my pictures in my own Basic programs. I noticed the Five Liners program to do this in the September issue of Atari User and typed it in.

Then I changed the filename to the name of the picture and tried to run it, but all I got was error 176. It seems to be that GAD and DOS 3 require different formatted discs. How do I save a GAD picture on to a DOS 3 formatted disc? – **Dave E., Brighton.**

● GAD loads and works using Dos 2.5. Either use dos 2.5 or transfer GAD picture files to Dos 3 using the utility that comes with Dos 3. Have any of our readers written a Five Liner to do the job more easily?

International characters

ANYONE who has purchased Mini Office II will by now have discovered what and excellent package it is. The following information may assist users who haven't yet worked out how to underline and use the international character set so you can write Dear André Willey and so on.

To underline set, one of the control strings, say P2, to 27,25. This switches on the underlining and to turn it off set P3 to 27,26. To use the underlining feature put P2 at the beginning of the text you wish to underline by pressing Control+2 and put P3 at the end to switch this feature off.

International characters are obtained by using the Atascii value in a control string starting with 27,23. For example to get é set the string code to 27,23,20.

If you propose to use the international character set a lot it's worth making a French set, German set and so on and save a version of each. Also, do not overlook that you can use the selective search and replace to change any e characters to é for any documents that have already been created. – **Mike Rooke, Durham City.**

Graphics dumps

I FOUND Mini Office II a very interesting and useful piece of software. Unfortunately it doesn't support my Atari 1010 printer/plotter, and when I use the graphics module it isn't possible to send the screen display to the plotter.

Do you know how I can make my plotter dump the screens? – **Noel Passchijn-Devynck, Belgium.**

● For printers that it does not support directly, Mini Office II allows you to save graphics screen to disc by selecting the Option icon and then Disc Save from the next menu.

The saved screen can then be dumped using any screen dumps.

Saving programs

PLEASE could you tell me how to save programs on to tape, because when I type programs into my computer I would like to record them to play in the future.

Also could you tell me if you sell copies of the games you print in Atari User and tell me how much you sell them for. – **Martin Boyle, Stockton-on-Tees, Cleveland.**

● Once you've typed your program in just type:

```
CSAVE
```

Then to load the program enter:

```
CLOAD
```

It's a good idea to save your work about every half hour. Then if anything goes wrong, such as a power cut, at least you can re-load the last saved version and carry on typing it in. We don't sell the games on disc each month, but you'll find an offer in this issue of *Atari User* for ten of the best games previously published.

Secret of the 1010 deck

MANY of your readers have reported problems they encountered while attempting to load tapes with the 1010 tape deck.

The secret to reliable operation is to clean not only the tape heads but also the capstan and pinchwheel.

To do this press play on the deck and use a cotton bud sprayed with a suitable cleaner – I use R.S aerosol cleaning fluid which is available from good dealers.

Other electrical cleaning sprays may be suitable, but check that they do not contain any lubricant. The heads can be cleaned with an up and down action of the bud.

Once you have cleaned the heads go to Basic and type POKE 54018,32 to activate the tape transport motor.

The capstan – the verticle steel rod – and the pinchwheel – the rubber wheel pressing against the capstan – are to the right of the heads and both should be cleaned with the sprayed bud until the brown tape oxide has been removed.

Note that the bud will continue to pick up a black deposit from the pinchwheel even after it is clean. This cleaning will do much to restore reliable operation, whereas a fabric tape cleaner will only clean the heads.

If you are handy with a soldering iron you may like to try another fix, but this should only be tried if the deck is out of warranty.

Unscrew both halves of the case and unplug all the connectors from the board before removing it from the base.

Locate resistors R111, R112, R113, R114, R115 and R159 (their numbers should be printed on the board), and replace them with resistors of the same value but of 1% tolerance.

Since these resistors control feedback loops in the FSK decoding filters, replacing them with more accurate values should improve performance in this vital area of the circuit.

I will also echo previous warnings about tampering with the head alignment, since this requires the use of a azimuth tape and special equipment.

Other methods of alignment are made horrendously difficult by the appalling playback quality – particularly through the average TV speaker.

Finally, a word about the tapes themselves. It is poor economy to buy cheap tapes which will probably then refuse to load.

Also do not use chrome, pseudo chrome or metal tapes which can destroy the tape heads over a period of time. – **Derryck Croker, Watford, Herts.**

Machine code entry

I AM interested in programming in machine code and I'm willing to give it everything! But I have been told I will need an assembler and an editor. Please could you tell me how to obtain these, and any books that will be useful.

Is this all I will need or am I skimming the surface? – **Peter Barry, Birkenhead, Merseyside.**

● The easiest way for you to get into machine code programming on your Atari is to buy an Atari Assembler/Editor Cartridge. This plugs into your computer and comes with an easy to understand manual and instruction card.

You will also need to obtain a few tutorial books – and watch future issues of *Atari User* for a new series on easy programming using machine code.

Rare cartridges

PLEASE can you tell me where I can get cartridges for my Atari 800XL. I live in Devon and I have had the computer for nearly two years now and I still can't find cartridges around where I live. – **Simon Legg, Axminster, Devon.**

● Unfortunately the supply of cartridges for Atari computers has dwindled recently, but with the introduction of the new 65XE games console there should be a new surge in cartridge-based software coming out.

Stuck with the keys

I BOUGHT a game for my Atari 800XL not realising it was keyboard control. Is there any way of typing in the command for joystick control and if so would you please tell me? – **Barry Mitchell, Liverpool.**

● Unfortunately games need writing specially to accept joysticks rather than the keyboard. It's unlikely that you could convert any game you have bought.

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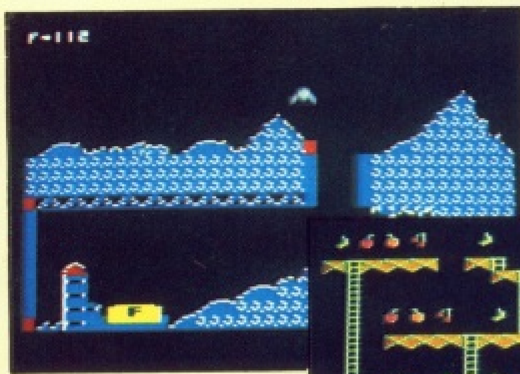
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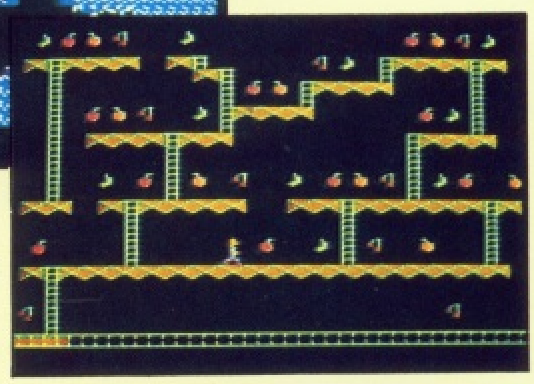
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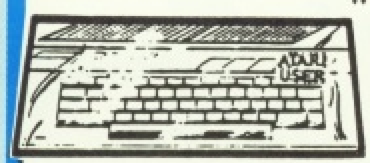
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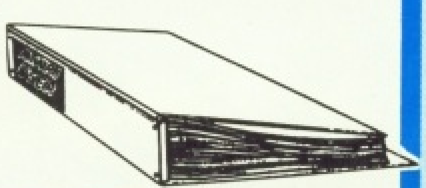


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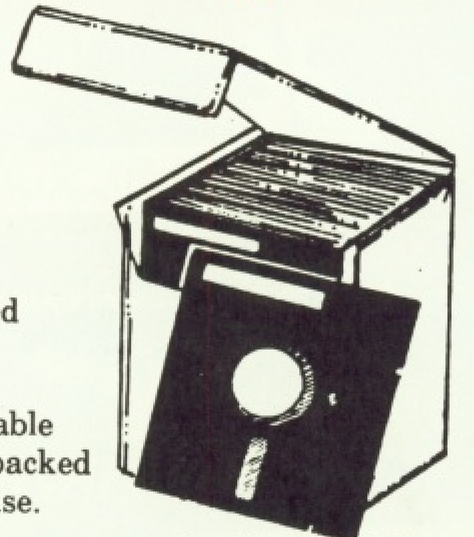
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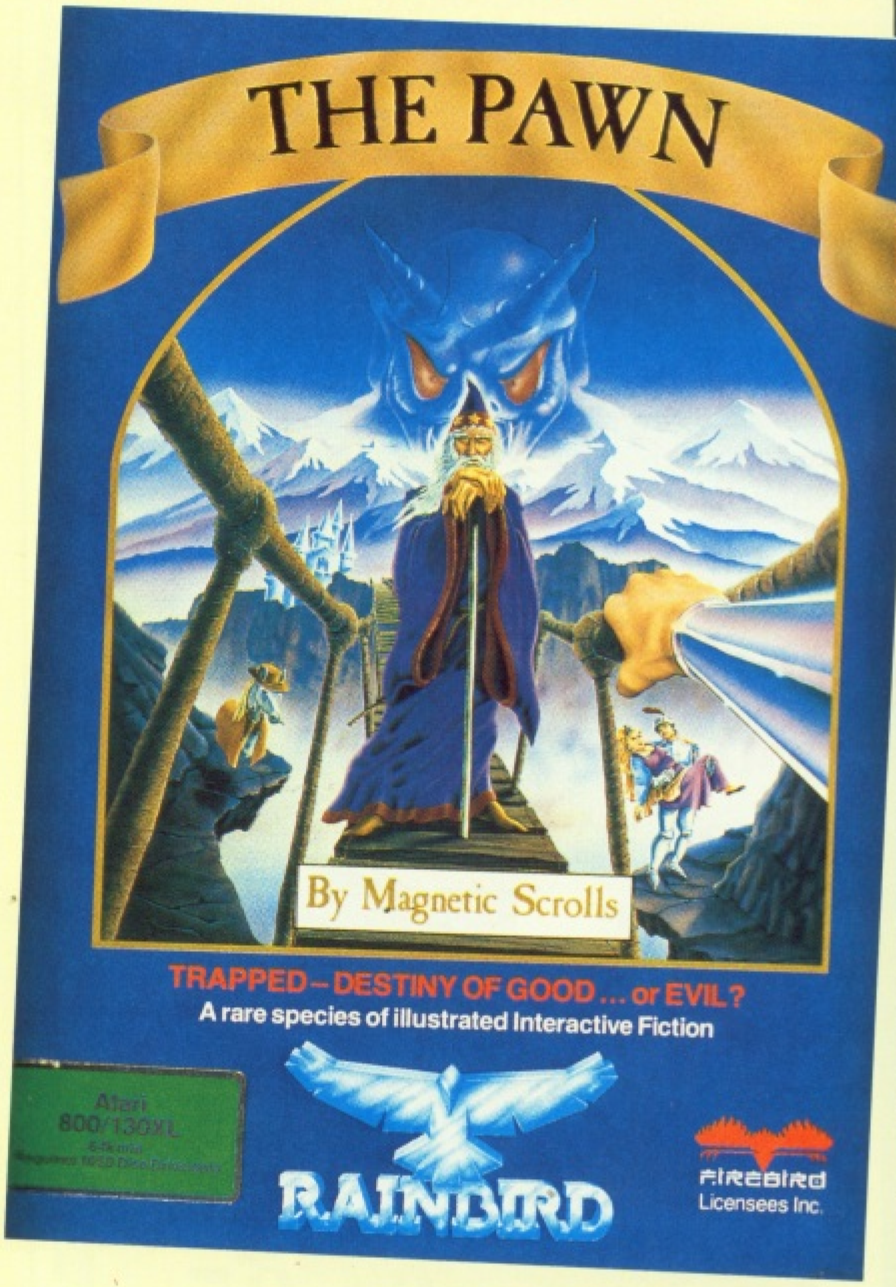
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SPECIAL FX

RICHARD VANNER concludes his series on amazing effects with a routine to plot your own software sprites

THIS month's Special FX gives you a routine that allows you to plot software sprites of any shape on to any graphics screen. The program itself is very complex so don't need to know how it works – just type it in and get objects moving round your screen.

Software sprites differ from hardware sprites in many ways. For example, they will interfere with the display but a hardware sprite won't. Hardware sprites also have independent colour registers whereas software sprites are limited to the playfield colours.

These points may lead you to wonder why we use hardware sprites at all? Well the disadvantage of the hardware sprites is that there are only four available and each one can only be eight bits wide. In the case of a software sprite you can define any size and have as many as you wish.

Type in Listing I to see the software sprites in action. Listing II is the Assembler listing and this will be of interest to any machine code writer as it uses some well known techniques. Also note that the routine uses part of page six for variable storage, so watch out for memory conflicts.

Before you can adapt the routine to plot your own software sprites, you need to know how they work and how they will affect the screen display. The call from Basic is a USR command that sends the eight parameters shown in Table I to the machine code routine. It takes the following format:

```
X=USR(ADDRESS,SPRITE,BYTES
,TYPE,WIDTH,HEIGHT,X,Y)
```

These parameters may seem a little complex but each one is essential, so let's look at them in detail.

The first one is the start address of the routine. Listing I copies the code into the string CODE$ and because the routine is relocatable the string can be anywhere in memory and the code will still run without any conflict. If you do copy the code into a string you can find the first parameter by using the command ADR(CODE$).

The second parameter is the address of the sprite. This again could be stored in a string or elsewhere, but you must know where it is.

Next is the number of bytes used in the current graphics mode. Table II gives you a cross reference if you are unsure of this.

The fourth parameter is the type flag. If set to 0 then the sprite will be plotted using the machine code OR instruction, otherwise a non-zero value will result in an EOR instruction being used.

The OR merges the sprite into the background whereas the EOR has other properties which allow the sprite to be printed over a background, and then erased without affecting the background.

The width parameter comes next and this must be the number of bytes across that the sprite takes up: Height is the number of lines down the sprite.

The final two parameters are the X and Y values of the pixel positions where the sprite will be plotted.

Tis is the end of the FX series. Now it's time to put the routines we've covered together and produce your own stunning FXs.

Graphics mode	Number of bytes per line
0	40
1	20
2	20
3	10
4	10
5	20
6	20
7	40
8	40
9	40
10	40
11	40
12	40

Table II: Bytes used in graphics modes

ADDRESS	Address of the sprite plotting routine.
SPRITE	Address of the sprite to be plotted.
BYTES	Number of bytes across the screen.
TYPE	Type of plot output.
WIDTH	Width of the sprite.
HEIGHT	Height of the sprite.
X	X position to plot the sprite.
Y	Y position.

Table I: The parameters passed to the routine

Listing I: Basic program for FX #6

```
1 REM ********************
2 REM *   SPECIAL FX #6   *
3 REM * SOFTWARE SPRITES *
4 REM *        BY         *
5 REM *  Richard Vanner  *
6 REM ********************
10 DIM A$(10),CODE$(500),XPOS(10),YPOS
(10),XDIREC(10),YDIREC(10),OLDX(10),OL
DY(10)
12 NUMSP=2
15 GRAPHICS 7+16
20 FOR A=1 TO 500
25 READ B:IF B=-1 THEN POP :GOTO 50
30 CODE$(A,A)=CHR$(B)
40 NEXT A
50 FOR A=1 TO 10
```

Turn to Page 55 ▶

◀ From Page 53

```
60 READ B:A$(A,A)=CHR$(B)
70 NEXT A
72 FOR X=1 TO 92
73 Z=USR(ADR(CODE$),ADR(A$),40,0,2,5,X
*2,X)
74 Z=USR(ADR(CODE$),ADR(A$),40,0,2,5,1
84-X*2,X)
75 NEXT X
80 FOR A=1 TO 10
82 XPOS(A)=INT(RND(1)*100)
84 YPOS(A)=INT(RND(1)*100)
86 XDIREC(A)=INT(RND(1)+1)
88 YDIREC(A)=INT(RND(1)+1)
90 NEXT A
91 GOSUB 100
92 GOSUB 300
93 GOSUB 200:GOTO 91
99 REM  EXCLUSIVE-OR SPRITES
100 FOR BOX=1 TO NUMSP
110 X=XPOS(BOX):Y=YPOS(BOX)
130 Z=USR(ADR(CODE$),ADR(A$),40,1,2,5,
X,Y)
135 OLDX(BOX)=X:OLDY(BOX)=Y
140 NEXT BOX:RETURN
200 REM  UN-EXCLUSIVE OR
210 FOR BOX=1 TO NUMSP
220 X=OLDX(BOX):Y=OLDY(BOX)
230 Z=USR(ADR(CODE$),ADR(A$),40,1,2,5,
X,Y)
240 NEXT BOX:RETURN
299 REM  UPDATE ALL CO-ORDINATES
300 FOR BOX=1 TO NUMSP
305 X=XPOS(BOX)+XDIREC(BOX)
310 Y=YPOS(BOX)+YDIREC(BOX)
320 IF X=0 THEN XDIREC(BOX)=1
330 IF X=200 THEN XDIREC(BOX)=-1
340 IF Y=0 THEN YDIREC(BOX)=1
350 IF Y=92 THEN YDIREC(BOX)=-1
360 XPOS(BOX)=X:YPOS(BOX)=Y
370 NEXT BOX:RETURN
500 DATA 104,104,133,209,104,133,208,1
04,104,141,7,6,104,104,141,5,6,104,104
,141,0,6,141,1,6
510 DATA 104,104,141,4,6,104,104,170,1
04,104,133,203,169,0,133,204,6,203,38,
204,6,203,38,204,6
520 DATA 203,38,204,165,203,133,205,16
5,204,133,206,6,203,38,204,6,203,38,20
4,165,203,24,101,205,133
530 DATA 203,165,204,101,206,133,204,1
38,41,6,141,6,6,138,41,248,74,74,74,24
,101,203,133,203,165
540 DATA 204,105,0,133,204,165,203,24,
101,88,133,203,165,204,101,89,133,204,
165,203,141,2,6,165,204
550 DATA 141,3,6,160,0,177,208,133,205
,169,0,133,206,230,208,208,2,230,209,1
74,6,6,240,7,70
560 DATA 205,102,206,202,208,249,173,5
,6,208,18,165,205,160,0,17,203,145,203
,200,165,206,17,203,145
570 DATA 203,24,144,15,165,205,160,0,8
1,203,145,203,200,165,206,81,203,145,2
03,230,203,208,2,230,204
580 DATA 206,1,6,173,1,6,208,176,173,2
,6,24,109,7,6,133,203,173,3,6,105,0,13
3,204,173
590 DATA 0,6,141,1,6,206,4,6,208,139,9
6,-1
700 REM  SPRITE DATA
800 DATA 255,255
810 DATA 213,87
820 DATA 213,87
830 DATA 213,87
840 DATA 255,255
```


1 CAJ (W)	84 F3L (P)	320 TW3 (A)
2 CAK (3)	86 JR8 (Q)	330 R18 (K)
3 CAL (V)	88 K18 (J)	340 U56 (3)
4 CAM (4)	90 DPT (Q)	350 OAM (Y)
5 CAN (W)	91 QDS (U)	360 Y97 (8)
6 CAP (7)	92 QRS (Q)	370 GC4 (J)
10 SM1 (Q)	93 2V4 (O)	500 J7C (T)
12 LFK (8)	99 DT9 (L)	510 K83 (T)
15 W8A (7)	100 KE1 (O)	520 V25 (N)
20 SO5 (Y)	110 WA4 (P)	530 KUM (4)
25 3TH (5)	130 5U1 (O)	540 VL4 (F)
30 4GW (R)	135 XO9 (6)	550 LAW (Q)
40 DPN (L)	140 FY2 (V)	560 YR8 (U)
50 RX8 (D)	200 CUT (J)	570 XQP (3)
60 AFH (S)	210 KJ2 (1)	580 5MC (1)
70 DPR (J)	220 W4F (S)	590 43F (F)
72 S8V (U)	230 5U2 (D)	700 CUY (6)
73 D85 (Y)	240 FY3 (N)	800 RQO (D)
74 G9F (M)	299 EJT (X)	810 RGF (N)
75 ECG (7)	300 KE3 (G)	820 RLF (E)
80 RXC (N)	305 W47 (1)	830 RQF (N)
82 ETL (7)	310 VXV (U)	840 S70 (W)

Listing II: Machine code for Listing I

```
0100 ;*******************************
0110 ;*     SOFTWARE SPRITES        *
0120 ;*                             *
0130 ;* IF YOU WISH TO INCLUDE      *
0140 ;* THIS ROUTINE IN A MACHINE   *
0150 ;* CODE ROUTINE THEN STRIP     *
0160 ;* OFF ALL PLA INSTRUCTIONS    *
0170 ;* AT THE START AND SET THE    *
0180 ;* REQUIRED PARAMETERS BEFORE  *
0190 ;* CALLING.                    *
0200 ;*******************************
0210 ;ENTRIES:
0220 ;$D0    : ADDRESS OF SPRITE
0230 ;WID    : WIDTH OF SPRITE
0240 ;HIEGHT : HIGHT OF SPRITE
0250 ;TYPE   : 0=OR 1=EOR
0260 ;X REG  : X POSITION
0270 ;Y REG  : Y POSITION
0280 SPRITE = $D0
0290 TEMP =  $CB
0300 TEMP2 = $CD
0310 WID =   $0600
0320 WIDTH = $0601
0330 XSTART = $0602
0340 HEIGHT = $0604
0350 TYPE =  $0605
0360 PIXELS = $0606
0370 LENGTH = $0607
0380 ;
0390 ;PROGRAM CAN BE ASSEMBLED TO
0400 ;ANY ADDRESS
0410 ;
0420      *=  $2000
0430 START
0440      PLA
0450      PLA
0460      STA SPRITE+1
0470      PLA
0480      STA SPRITE
0490      PLA
0500      PLA
0510      STA LENGTH
0520      PLA
0530      PLA
0540      STA TYPE
0550      PLA
0560      PLA
0570      STA WID
0580      STA WIDTH
0590      PLA
0600      PLA
0610      STA HEIGHT
0620      PLA
0630      PLA
0640      TAX
0650      PLA
0660      PLA
0670      STA TEMP
0680      LDA #0
0690      STA TEMP+1
0700 ;
0710 ;SCREEN Y * 40 BYTES
0720 ;
0730      ASL TEMP
0740      ROL TEMP+1
0750      ASL TEMP
0760      ROL TEMP+1
0770      ASL TEMP
0780      ROL TEMP+1
0790 ;
0800 ;SAVE Y * 8
0810 ;
0820      LDA TEMP
0830      STA TEMP2
0840      LDA TEMP+1
0850      STA TEMP2+1
0860 ;
0870      ASL TEMP
0880      ROL TEMP+1
0890      ASL TEMP
0900      ROL TEMP+1
0910 ;
0920 ;(Y*8)+(Y*32)=Y*40
0930 ;
0940      LDA TEMP
0950      CLC
0960      ADC TEMP2
0970      STA TEMP
0980      LDA TEMP+1
0990      ADC TEMP2+1
1000      STA TEMP+1
1010 ;
1020 ;NOW FIND NUMBER OF X BYTES
1030 ;AND THE PIXEL OFFSET
1040 ;
1050      TXA
1060      AND #6
1070      STA PIXELS
1080      TXA
1090      AND #255-7
1100      LSR A
```

Turn to Page 56 ▶

◀ From Page 55

```
1110      LSR A
1120      LSR A
1130      CLC
1140      ADC TEMP
1150      STA TEMP
1160      LDA TEMP+1
1170      ADC #0
1180      STA TEMP+1
1190 ;
1200 ;ADD SCREEN ADDRESS
1210 ;
1220      LDA TEMP
1230      CLC
1240      ADC 88
1250      STA TEMP
1260      LDA TEMP+1
1270      ADC 89
1280      STA TEMP+1
1290 ;
1300 ;ROUTINE NOW PRINTS SPRITE
1310 ;ACROSS AND THEN DOWN
1320 ;
1330 DOWN
1340      LDA TEMP
1350      STA XSTART
1360      LDA TEMP+1
1370      STA XSTART+1
1380 ACROSS
1390      LDY #0
1400      LDA (SPRITE),Y
1410      STA TEMP2
1420      LDA #0
1430      STA TEMP2+1
1440      INC SPRITE
1450      BNE NOHIGH
1460      INC SPRITE+1
1470 NOHIGH
1480      LDX PIXELS
1490      BEQ SKIPROLL
1500 ;
1510 ;ROLL OVER BITS ACROSS 2 BYTES
1520 ;
1530 ROLL
1540      LSR TEMP2
1550      ROR TEMP2+1
1560      DEX
1570      BNE ROLL
1580 SKIPROLL
1590 ;
1600 ;NOW PLOT SPRITE ONTO SCREEN
1610 ;
1620      LDA TYPE
1630      BNE TYPE2
1640      LDA TEMP2
1650      LDY #0
1660      ORA (TEMP),Y
1670      STA (TEMP),Y
1680      INY
1690      LDA TEMP2+1
1700      ORA (TEMP),Y
1710      STA (TEMP),Y
1720      CLC            ;FORCE BRANCH
1730      BCC TYPE3
1740 TYPE2
1750      LDA TEMP2
1760      LDY #0
1770      EOR (TEMP),Y
1780      STA (TEMP),Y
1790      INY
1800      LDA TEMP2+1
1810      EOR (TEMP),Y
1820      STA (TEMP),Y
1830 TYPE3
1840      INC TEMP
1850      BNE SKIPHI
1860      INC TEMP+1
1870 SKIPHI
1880      DEC WIDTH
1890      LDA WIDTH
1900      BNE ACROSS
1910 ;
1920 ;DO NEXT LINE OF SPRITE
1930 ;
1940      LDA XSTART
1950      CLC
1960      ADC LENGTH
1970      STA TEMP
1980      LDA XSTART+1
1990      ADC #0
2000      STA TEMP+1
2010      LDA WID
2020      STA WIDTH
2030      DEC HEIGHT
2040      BNE DOWN
2050      RTS            ;EXIT
```

File converter

MATTHEW DUNN shows how to use AtariWriter files in Mini Office II

UNTIL the advent of Mini Office II and its integrated package of software, I did all my word processing using Atariwriter. For very many obvious reasons – mail merge, 80 column preview, ease of use and so on – I wanted to use my old Atariwriter files with Mini Office II.

The Mini Office II word processor can read in documents created from AtariWriter, but unfortunately the format of the embedded commands is different. Faced with doing innumerable search and replace operations, I wrote this conversion program.

This utility will convert AtariWriter embedded commands to ones suitable for use with the Mini Office II word processor. Some of the commands are simple code changes, though others such as underlining require more complex handling. Table I shows how the commands map on to each other and the program line that handles the conversion.

Let's take a look at the conversion process. Before anything can be done a character must be brought from the source file. The program first tests to see if it is a text character and if it is it is put straight into the output file.

If it is not, it is tested for being a reverse video character. In AtariWriter this means that the character is to be underlined. Mini Office II handles this using the more flexible printer macros so the program will place the code for printer macro 3 at the start of an underlined section and printer macro 4 at the end. You will need to enter the codes to turn underlining on and off against the appropriate macro strings. A similar technique is used for wide print and sub/superscript conversion.

If the character read in has a value between 1 and 28 it represents one of the AtariWriter embedded commands. Line 200 converts the character code into a line number which references the appropriate routine. Again Table I can be used to see how each character code maps on to the Mini Office II embedded command.

Some of the commands, such as left, top or bottom margin have direct equivalents which just require the appropriate embedded command to be output.

Some of them have a number setting their value following them, so the routine at line 5000 reads it (if any) and stores the value in the variable 'NUM'. For Mini Office II the number following the embedded command must be in reverse video.

Each embedded command that has a number after it stored in A$ to be converted to reverse video by the routine starting at line 5100 before being output. The header and footer commands also use this routine to convert the header/footer text into reverse video.

The embedded commands in AtariWriter which refer to vertical spacing are in half lines. Since Mini Office II deals with full lines, all the vertical parameters must be divided by two before being output.

The right margin may also require some further processing since the Mini Office II equivalent is line length. This is handled by subtracting the left margin from the right. The value of the right margin is held in the variable RM and is set to a default value on line 20 of the routine.

Paragraphs are converted into the appropriate number of hard returns and spaces. For this to be possible the paragraph settings in AtariWriter must be stored until the paragraph character is encountered.

INDT holds the numbers of spaces to indent a paragraph by and defaults to 5. The variable PS holds the paragraph spacing. When the paragraph code is used the program outputs PS blank lines and INDT spaces before the next character.

Finally, if there are any special printer codes used these are always replaced by the printer macro P7. If the special code is different in each case you will have to go through and edit each one (or assign a different macro) as it occurs.

Once the program has converted the entire file, the output file can be read straight into Mini Office II. In this way all the powerful features of Mini Office II can be used on your old AtariWriter files.

Turn to Page 59 ▶

Line No.	AW code	Command description	Mini Office II equivalent
1100	1	Wide print On/Off	(P1)/(P2)*
1200	2	Bottom Margin	BM
1300	3	Centre/Block right	codes 253/255
1400	4	Paragraph Spacing	stored
1500	5	New Page	code 140
1600	6	Define Footing	DF
1700	7	not used	
1800	8	Define Heading	DH
1900	9	Paragraph Indent	stored
2000	10	Justification	LJ/FJ
2100	11	not used	
2200	12	Left Margin	LM
2300	13	not used	
2400	14	not used	
2500	15	not used	
2600	16	Paragraph	see text
2700	17	not used	
2800	18	Right Margin	LL
2900	19	Line Spacing	LS
3000	20	Top Margin	TM
3100	21	not used	
3200	22	Join Files	GF
3300	23	not used	
3400	24	not used	
3500	25	Page Length	PL
3600	26	not used	
3700	27	not used	
3800	28	Superscript	(P5)*
3900	29	Subscript	(P6)*

P = Mini Office II printer macro

Table I: Codes used in AtariWriter and Mini Office II

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Gauntlet Deeper Dungeons	4.95	6.95
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Jewels of Darkness 64k	12.75	12.75
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◀ From Page 57

PROGRAM BREAKDOWN

1-40	Initialise variables and arrays
45-60	Opens input file
70-80	Opens output file
100-210	Main decode loop
1100-4100	Conversion routines (see table 1)
4500-4530	Routine for underlined text
5000-5060	Routine to read in embedded command parameter.
5100-5130	Routine to make text in A$ reverse video.
9000-9010	File closing at end of conversion.

VARIABLES

A$	Array for text strings.
WIDE	Wide print on/off flag.
LM	Holds current value of left margin.
RM	Holds current value of right margin.
TM	Holds current value of top margin.
BM	Holds current value of bottom margin.
INDT	Holds current paragraph indent value.
PS	Holds current paragraph spacing.
PL	Holds current page length.
LS	Holds current line spacing.
NUM	Returns current embedded parameter.
X	Holds current character code.
FUNC	Holds line number of present embedded command.
CNT	Counts the number of lines processed.
SETTING	Pointers to subroutine.
UNDERLINED	Pointers to subroutine.
REVVID	Pointers to subroutine.
NOUSED	Pointers to subroutine.

```
1 REM ATARIWRITER TO MINI OFFICE II FI
LE CONVERTER
2 REM WRITTEN BY MATTHEW DUNN
3 REM (c)ATARI USER
4 REM
10 REM Initialise Variables
20 WIDE=1:LM=10:RM=70:TM=12:BM=12:PS=2
:INDT=5:PL=66:LS=1:CNT=0:RV=0
30 SETTING=5000:UNDERLINED=4500:REVVID
=5100:NOUSED=1700
40 DIM A$(132)
45 REM Open input and output files
50 ? "Please enter the Atariwriter tex
t file";:? "Filespec: ";
55 TRAP 50:INPUT A$
60 CLOSE #1:OPEN #1,4,0,A$
70 ? "Please enter the Mini Office II
output";:? "file, Filespec: ";
75 TRAP 70:INPUT A$
80 CLOSE #2:OPEN #2,8,0,A$
90 ? :? "CONVERTING...":? :? :TRAP 900
0
95 REM Main Conversion Loop
100 GET #1,X
110 IF X=155 THEN CNT=CNT+1:? CHR$(28)
;CNT;" lines processed.":RV=0
120 IF (X>31) AND (X<128) THEN PUT #2,
X+RV:GOTO 100
130 IF X>159 THEN GOTO UNDERLINED
140 IF X>128 THEN PUT #2,X:GOTO 100
200 FUNC=1000+X*100
210 GOTO FUNC
890 REM
900 REM Routines to handle individual
functions
910 REM
1092 REM WIDE PRINT
1093 REM (P1)=START WIDE  (P2)=END WID
E
1100 IF WIDE=1 THEN PUT #2,17:WIDE=0:G
OTO 100
1110 PUT #2,18:WIDE=1:GOTO 100
1192 REM BOTTOM MARGIN
1200 GOSUB SETTING
1210 A$=STR$(INT(NUM/2))
1220 GOSUB REVVID
1230 ? #2;"BM";A$;" ";
1240 GOTO 100
1292 REM CENTRE OR BLOCK RIGHT
1300 GET #1,X
1310 IF X=3 THEN PUT #2,255:GOTO 100:R
EM BLOCK RIGHT
1320 PUT #2,253:GOTO 110:REM CENTRE
1392 REM STORE PARAGRAPH SPACING
1400 GOSUB SETTING
1410 PS=INT(NUM/2)
1420 GOTO 100
1492 REM FORCE PAGE BREAK
1500 PUT #2,140
1510 GOTO 100
1592 REM DEFINE FOOTING
1600 ? #2;"DF";:RV=128
1610 GOTO 100
1692 REM PRINT STYLE - NOT USED
1700 GOSUB SETTING
1710 GOTO 100
1792 REM DEFINE HEADING
1800 ? #2;"DH";:RV=128
1810 GOTO 100
1892 REM STORE PARAGRAPH INDENTATION
1900 GOSUB SETTING
1910 INDT=NUM
1920 GOTO 100
1992 REM JUSTIFICATION 0=LJ 1=FJ
2000 GOSUB SETTING
2010 IF NUM=1 THEN ? #2;"FJ ";:GOTO 10
0
2020 ? #2;"LJ ";:GOTO 100
2100 GOTO 100
2192 REM LEFT MARGIN
2200 GOSUB SETTING
2210 A$=STR$(NUM):LM=NUM
2220 GOSUB REVVID
2230 ? #2;"LM";A$;" ";
2240 GOTO 100
2300 GOTO NOUSED
2400 GOTO NOUSED
2492 REM PRINTER CODE =(P7)
2500 PUT #2,23
2510 GOTO 100
2592 REM PARAGRAPH START
2599 REM PARAGRAPH SPACING
2600 IF PS=1 THEN 2640
2610 FOR I=1 TO PS-1
2620 ? #2
2630 NEXT I
2640 ? #2;"CP5 "
2645 REM PARAGRAPH INDENTATION
2650 IF INDT<0 THEN 2690
2660 FOR I=1 TO INDT
2670 PUT #2,32
2680 NEXT I
2690 GOTO 100
2692 REM STARTING PAGE NUMBER
2700 GOSUB SETTING
2710 A$=STR$(NUM)
2720 GOSUB REVVID
2730 ? #2;"PN";A$;" ";
2740 GOTO 100
2792 REM RIGHT MARGIN
2800 GOSUB SETTING
2810 A$=STR$(NUM-LM)
2820 GOSUB REVVID
2830 ? #2;"LL";A$;" ";
2840 GOTO 100
2892 REM LINE SPACING
2900 GOSUB SETTING
2910 A$=STR$(INT(NUM/2))
2920 GOSUB REVVID
2930 ? #2;"LS";A$;" ";
2940 GOTO 100
2992 REM TOP MARGIN
3000 GOSUB SETTING
3010 A$=STR$(INT(NUM/2))
3020 GOSUB REVVID
3030 ? #2;"TM";A$;" ";
3040 GOTO 100
3100 GOTO NOUSED
3192 REM JOIN FILES
3200 INPUT #1,A$
3210 GOSUB REVVID
3220 ? #2;"GF";A$;" "
3230 GOTO 100
3300 GOTO NOUSED
3400 GOTO NOUSED
3492 REM PAGE LENGTH
3500 GOSUB SETTING
3510 A$=STR$(INT(NUM/2))
3520 GOSUB REVVID
3530 ? #2;"PL";A$;" ";
3540 GOTO 100
3600 GOTO NOUSED
3700 GOTO NOUSED
3796 REM SUPERSCRIPT = (P5)
3800 PUT #2,21
3810 GOTO 100
3896 REM SUBSCRIPT  = (P6)
3900 PUT #2,22
3910 GOTO 100
4000 GOTO NOUSED
```

Turn to Page 60 ▶

◀ From Page 59

```
4100 GOTO NOUSED
4495 REM ROUTINE TO HANDLE UNDERLINED
TEXT
4496 REM Underline ON=(P3) Underline O
FF=(P4)
4500 PUT #2,19:PUT #2,X-128
4510 GET #1,X
4520 IF X>127 THEN PUT #2,X-128:GOTO 4
510
4530 PUT #2,20:GOTO 110
4995 REM ROUTINE TO READ IN EMBEDED CO
MMAND
4996 REM SETTING VALUES.
5000 NUM=0
5010 NOTE #1,P1,P2:GET #1,X
5020 IF X=32 THEN RETURN
5030 IF X<48 OR X>=57 THEN POINT #1,P1
,P2:RETURN
5040 X=X-48
5050 NUM=NUM*10+X
5060 GOTO 5010
5095 REM ROUTINE TO CONVERT A$ TO REVE
RSE VIDEO
5100 FOR I=1 TO LEN(A$)
5110 A$(I,I)=CHR$(ASC(A$(I,I))+128)
5120 NEXT I
5130 RETURN
8996 REM END OF CONVERSION
9000 CLOSE #1:CLOSE #2
9010 ? "ALL DONE"
9999 END
```

Get it right! II

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1	CAJ (W)	1092	DKN (Y)	1792	EFN (Q)
2	CAK (3)	1093	DLN (U)	1800	JJ3 (5)
3	CAL (V)	1100	LV8 (W)	1810	PHV (S)
4	CAM (4)	1110	NWA (D)	1892	EKN (S)
10	CP1 (U)	1192	DPN (8)	1900	590 (L)
20	7HW (H)	1200	4EO (7)	1910	WNW (A)
30	F1W (Q)	1210	JGV (J)	1920	PPV (P)
40	PXT (Q)	1220	UMF (G)	1992	EPN (P)
45	DA4 (G)	1230	C4C (2)	2000	451 (U)
50	54L (E)	1240	NXV (T)	2010	7DT (C)
55	65F (P)	1292	DTN (Y)	2020	JQX (T)
60	6SW (N)	1300	PM5 (5)	2100	NKW (1)
70	LOL (V)	1310	82W (Y)	2192	DPP (6)
75	65K (7)	1320	RJ2 (U)	2200	4E1 (A)
80	6YY (A)	1392	DXN (X)	2210	G5D (Y)
90	8PR (E)	1400	4NO (K)	2220	UMG (2)
95	DA9 (R)	1410	4FD (S)	2230	CFD (E)
100	QQV (E)	1420	P2V (3)	2240	NXW (P)
110	8FR (Y)	1492	E2N (5)	2300	T81 (E)
120	WPH (W)	1500	Q1W (L)	2400	TD1 (N)
130	R5N (J)	1510	P4V (9)	2492	E2P (H)
140	2VH (6)	1592	E6N (G)	2500	PV6 (E)
200	1GK (H)	1600	J83 (T)	2510	P4W (M)
210	WXR (R)	1610	P8V (1)	2592	E6P (J)
890	EOO (U)	1692	EAN (6)	2599	EEP (N)
900	CV1 (W)	1700	510 (C)	2600	84T (A)
910	DO1 (U)	1710	PDV (H)	2610	CPF (4)

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
2620	DN2 (8)	2992	EPP (U)	3910	PMX (H)
2630	NNT (8)	3000	452 (Q)	4000	SV3 (D)
2640	17F (D)	3010	J7X (2)	4100	TO3 (H)
2645	E3P (C)	3020	UDH (Y)	4495	E5R (L)
2650	GDY (D)	3030	CFE (L)	4496	E6R (H)
2660	EW7 (2)	3040	NPX (8)	4500	HAH (G)
2670	QFF (7)	3100	TO2 (L)	4510	PX8 (L)
2680	NYT (5)	3192	DPQ (N)	4520	D3A (J)
2690	PRW (Y)	3200	UF4 (8)	4530	98E (V)
2692	EAP (U)	3210	UKH (M)	4995	ESR (S)
2700	511 (N)	3220	AN5 (K)	4996	ETR (V)
2710	YAX (C)	3230	NVX (9)	5000	K6H (1)
2720	V8G (M)	3300	T82 (L)	5010	FQ1 (A)
2730	D6V (A)	3400	TD2 (A)	5020	7XJ (3)
2740	PKW (L)	3492	E2Q (F)	5030	NK8 (Q)
2792	EFP (Q)	3500	4S2 (O)	5040	PF6 (D)
2800	551 (X)	3510	JUX (Q)	5050	YD6 (P)
2810	G22 (L)	3520	VOH (8)	5060	PGH (U)
2820	VDG (C)	3530	CWW (P)	5095	DNS (U)
2830	D5V (J)	3540	PAX (G)	5100	DH1 (D)
2840	PPW (G)	3600	TM2 (Q)	5110	YPK (A)
2892	EKP (D)	3700	TR2 (G)	5120	MYW (F)
2900	591 (5)	3796	EKQ (A)	5130	VMP (G)
2910	KCW (N)	3800	Q7Q (O)	8996	ETV (6)
2920	VHG (E)	3810	PHX (X)	9000	A55 (O)
2930	DED (6)	3896	EPQ (V)	9010	W8K (C)
2940	PTW (R)	3900	QCY (F)	9999	F11 (X)

Your HINTS & TIPS

Action Biker

HERE are the locations of eight of the items that you have to find:

By the big lake, by the river near the petrol station, by the fairground, in the building site, in the field near the the petrol station, beside the drag race track, otherside of the drag race track, by the small lake in the field near the petrol station. – *Michael Simons, Crowborough, East Sussex.*

F.15 Eagle

IF you are running out of fuel simply keep your finger on the afterburner key and see what happens. – *Dinesh Bhudia, Harlesdon, London.*

Crystal Raiders

PRESSING Start while holding the joystick button makes your craft invincible. You can then fly through all the alien craft and nothing will happen to you! – *Colin Raynor, Crediton, Devon.*

Mediator

IN the June 1987 issue of *Atari User* there were some tips for Mediator. Here's some more:

Screen 1: Position the spaceship in the centre of the screen and go downwards. When you get to the force field blast a large hole in it. Keep in the centre and go down this hole slowly and land softly on the pad.

Screen 2: Fire at the tree to make it fall and form a bridge. A bone should appear on the other side of the screen – go and collect it. Walk back over the bridge then on the patch of brown earth. You should hear a little noise that means that the bone is stored away.

Collect the other bones that appear and after six bones a horse will appear. You have to guide it over the bridge to the right hand edge of the screen. It will follow your exact steps, so be very careful when guiding it over the bridge. – *Susan Bowling, Macclesfield, Cheshire.*

Boulderdash

IF those irritating cubes are bothering you then simply dig an anticlockwise square, but always leave a block of earth in the middle as this will confuse them and cause them to stay there.

The crystal butterflies explode into nine diamonds when killed but if you kill one when it is adjacent to a wall it will only form six diamonds. Be careful just where you kill them, as finishing some levels requires an exact number of diamonds.

If some levels seem impossible, especially in the later stages of the game, try digging some earth from under a wall and drop a boulder through – you will be surprised by the result. – *Ruth James, Heaton Moor, Stockport.*

Arkanoid

WHEN you pick up the letter B, don't go straight through the portal, wait. Usually an extra man will fall down and this is more use to you. – *Frank Bellows, Reading, Berks.*

International Karate

TO obtain the higher belts you need the following points:

White belt: Already yours; yellow belt: 6000; green belt: 12000; purple belt: 18000; brown belt: 24000; black belt: 40000.

I found that on the lower belts (up to around Green belt) it is best to somersault in and follow it up with a flying kick. I also found that on the belts after Green it is best to stand your ground and let your opponent come towards you so you have the advantage of not having to wait for your previous move to finish. – *R. Holding, Oldham, Lancs.*

Ollies Follies

WHEN the game has loaded press Start and place your man in a safe place – where he can't be killed – and type Frank, Fanda or Zooom. These are passwords and will transport you to different levels of the game.

When the music plays and your hair goes funny colours you can walk into the robots and destroy them. – *R.E. Wilkinson, Deal, Kent.*

The Living Daylights.

LEVEL 1: When you jump the first rock keep jumping and you will get over all the remaining rocks.

Level 2: Pick up the binoculars and use them to make the screen brighter.

Level 3: Pick the hard hat and use it so that when a pipe hits you you only lose three strength points.

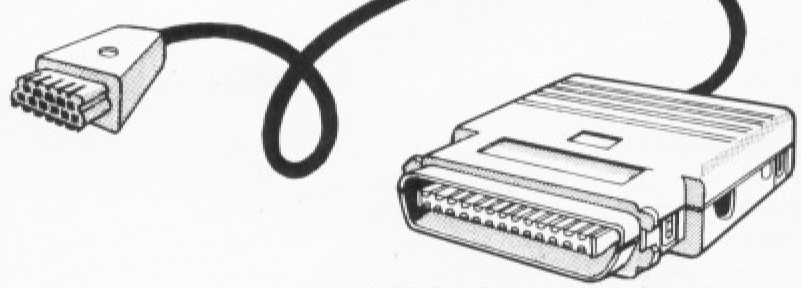
Level 4: Shoot the milkman straight away and keep running to the end.

Level 5: Shoot the balloons as fast as you can – before they are above you.

Level 7: Shoot the man who appears and keep running while jumping the bombs that the helicopter is dropping. – *A. Gates, Manchester.*

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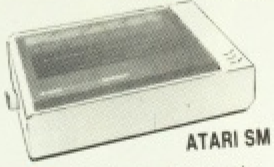
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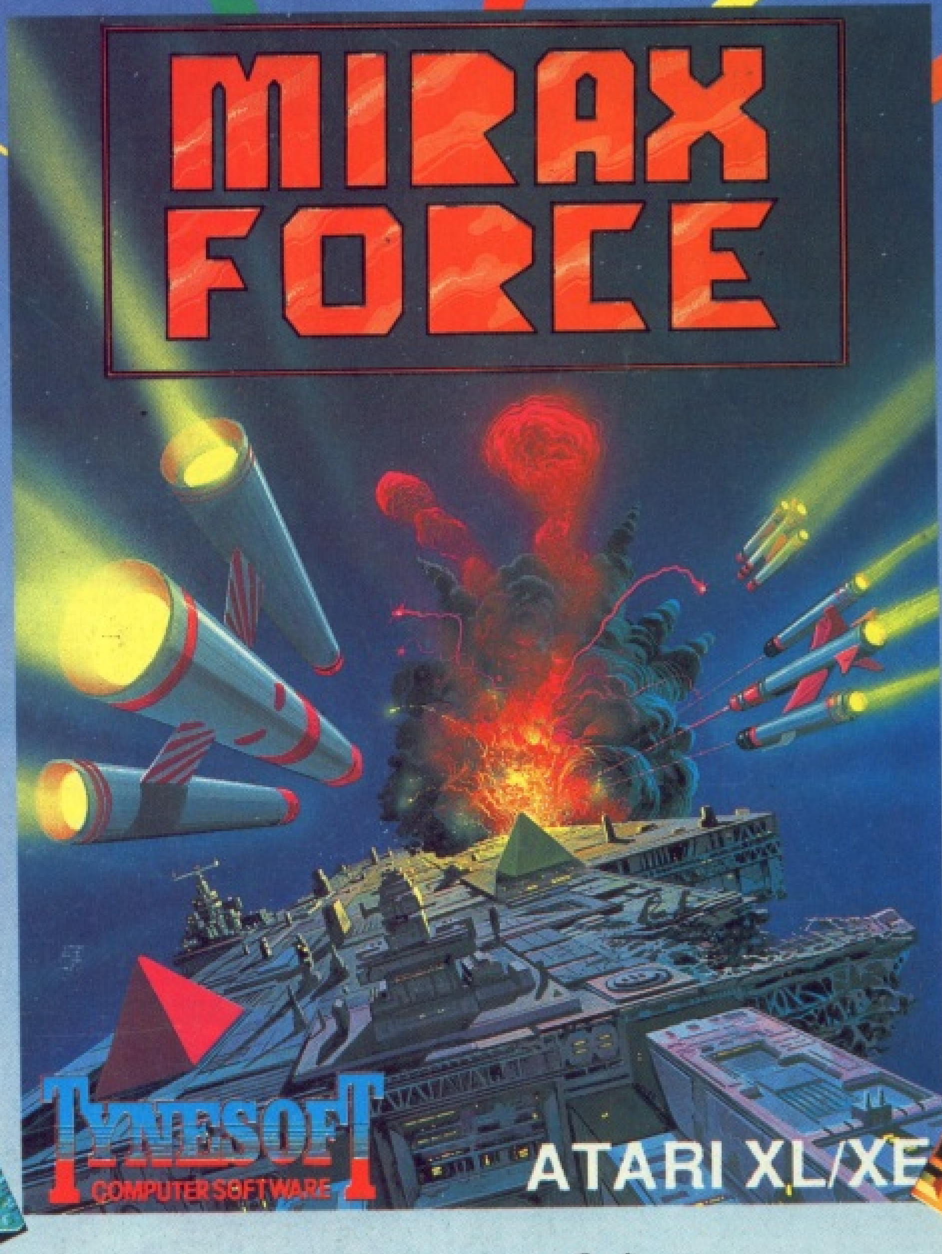
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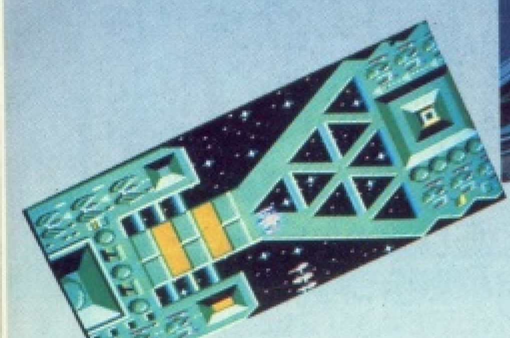
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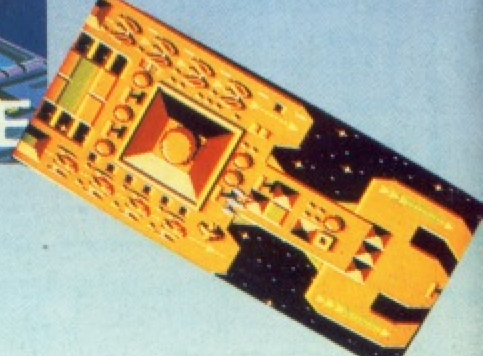


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